

# NETWORKWORLD

# BEST

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NEW  
DATA  
CENTER

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WHAT THE ENTERPRISE  
LIKES BEST

ABOUT NEXT-GEN IT

7 TIPS FOR

VIRTUALIZATION

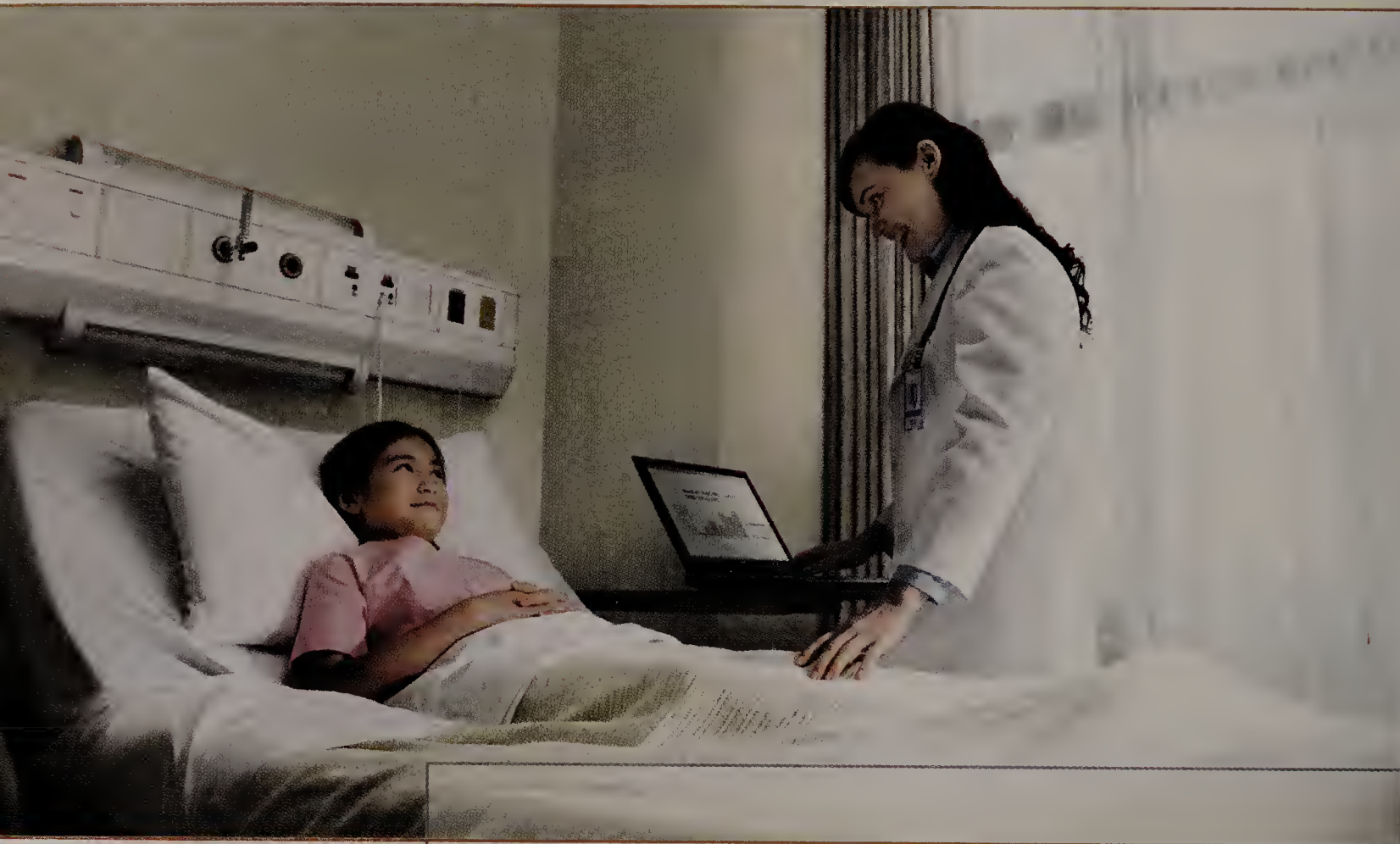
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# NETWORKWORLD

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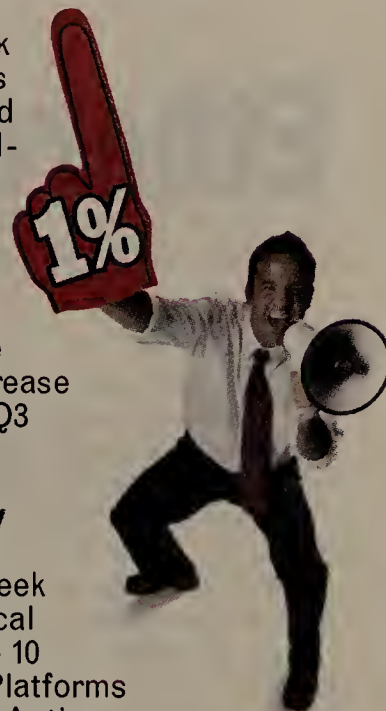
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## GOODBADUGLY

**Intel's record quarter! Up 1%!**

Intel CEO Paul Otellini last week crowed about his company's record \$10.2 billion third-quarter revenue. Of course, that doesn't sound so impressive when you realize it's just a 1% increase over last year's Q3 revenue.



### Patch Tuesday strikes again

Microsoft last week issued four critical patches to close 10 vulnerabilities. Platforms affected include Active Directory, Internet Explorer, Host Integration Server and Excel. In all, Microsoft issued 11 patches. In addition to the four that were critical, six were listed as important and one as moderate.

### Sadly, Enron's back in the news

You can add fraudulently marketing its broadband services to Enron's lengthy list of crimes. The Justice Department announced last week that Joseph Hirko, the former co-CEO of Enron Broadband services, has pleaded guilty to one count of wire fraud before the U.S. district court in Houston.

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## Ethernet standards confusion

Cisco, others roll out pre-standard gear and see need to go beyond specs

BY JIM DUFFY

Even though strides are being made to define standards for extending Ethernet to handle data center applications, these advances will not be a panacea, vendors say.

Proprietary extensions to those standards, which are being defined by the IEEE and Technical Committee T11 of the International Committee for Information Technology Standards, will still be required in order to address customer requirements for data-center-optimized Ethernet. Additionally, vendor marketing may confuse the issue even more, because some have adopted different acronymic brands that essentially refer to the same technology.

"The biggest [snag] is, what do we call it?" says Steve Garrison, vice president of marketing for Force10 Networks, one of a group of vendors driving standards for Converged Enhanced Ethernet (CEE), an extended version of Ethernet for data center applications. Cisco participates in the CEE standards efforts, though it refers to the technology as Data Center Ethernet (DCE).

"What customers really want right now is education," Garrison says. "Is this acronym proprietary? Is it a unified push among many vendors?"

### A new kind of Ethernet

CEE and DCE describe an enhanced Ethernet that will enable convergence of LAN, storage-area network and high-performance computing applications in data centers onto a single Ethernet interconnect-fabric. Currently, these applications have separate interconnect technologies, including Fibre Channel, InfiniBand and Myrinet.

This forces users and server vendors to support multiple interconnects to attach servers to the various networks, a situation that is costly, energy and operationally inefficient, and difficult to manage. So many in the industry — Brocade Communications, EMC, NetApp, Emulex, Fujitsu, IBM, Intel, Sun and Woven Systems, in addition to Cisco and Force10 — are proposing Ethernet as a single, unified interconnect fabric for the data center because of its ubiquity, familiarity, cost and speed advances: 10Gbps now, eventually increasing to 40G and 100Gbps.

But in its current state, Ethernet is not optimized to provide the service required for storage and high-performance computing traffic

### Inside the new Ethernet

Key components of converged enhanced/data-center Ethernet.

**FCoE:** Fibre Channel over Ethernet — emerging T11 standard for tunneling Fibre Channel storage traffic through Ethernet. Attempts to map deterministic Fibre Channel transmission to Ethernet.

**802.1Qau** — emerging IEEE standard for adding congestion notification to Ethernet.

**802.1Qaz** — emerging IEEE standard for adding enhanced transmission selection to Ethernet.

**802.1Qbb** — emerging IEEE standard for adding priority-based flow control to Ethernet.

**40G/100Gbps** — higher Ethernet speeds optimal for data-center applications.

— speed alone won't cut it, vendors say. Ethernet, which drops packets when traffic congestion occurs, needs to evolve into a low-latency, "lossless" transport technology with congestion management and flow-control features, CEE and DCE backers say.

"You need to make sure Ethernet will behave in the same way as Fibre Channel itself," says Claudio DeSanti, a technical leader in Cisco's Storage Technology group. DeSanti is vice chair of T11 and technical editor of the IEEE's 802.1Qbb priority-based flow-control project within the Data Center Bridging (DCB) task group.

T11's Fibre Channel over Ethernet (FCoE) defines the mapping of Fibre Channel frames over Ethernet so storage traffic can be converged onto a 10Gbps Ethernet network. The IEEE's DCB task force is defining three standards — 802.1Qau for congestion notification, Qaz for enhanced transmission selection, and Qbb for priority-based flow control.

### Where Ethernet standards fall short

Vendors say these standards should be solid enough to implement on products and deploy

in data centers in late 2009 or early 2010. The DCB standards will be final in March 2010, four months later than initially planned due to some outstanding, but not insurmountable issues, according to Pat Thaler, chair of the DCB Task Group in the IEEE.

But some leading-edge customers need a pre-standard, lossless Ethernet implementation now, vendors say; and even when these standards are complete, they will be incomplete, others say.

"A particular area where we feel these standards don't really address is the avoidance of congestion — primarily with respect to load-balancing traffic first before we rate-limit traffic at the source," says Bert Tanaka, vice president of engineering for Woven. "Qau and Qbb attempt to avoid congestion by slowing traffic from the source. But what we feel that they don't do is they don't actually try to avoid congestion by balancing traffic in the fabric. That is where we plan to couple [the standards] with our own technology."

Tanaka also says the DCB and FCoE standards are limited in their ability to scale to large networks.

"They are really targeted for a fairly small fabric — maybe hundreds of nodes," Tanaka says. "But if you're trying to scale to multiple hops and larger fabrics, it's not clear it would scale to something like that. FCoE ... is looking to a more constrained network size. It may not scale to the network the size of Google."

Thaler says no one ever proposed load balancing or congestion avoidance for inclusion in the DCB standards.

"I don't know any networks that have standardization for load balancing," she says. "Switch vendors like to keep that as their secret sauce."

And she disagrees with Tanaka's assertions that the standards will not scale. "I think that's (referring to) congestion notification but I don't entirely agree with that."

Tanaka says Woven and other switch and host-adapter vendors have implemented a pre-standard versions of Qbb to address the limitations of the standards as well as current market demand. Woven plans to comply with the standard once it is complete but also extend beyond it, he says.

Separately, Cisco is shipping pre-standard DCE technology on its products, such as the

See Ethernet, page 48





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## Booking it on data breaches

Re: World Bank denies report of massive data breaches ([www.nwdocfinder.com/7136](http://www.nwdocfinder.com/7136)):

These data breaches and thefts are due to a lagging business culture. As CIO, I'm always looking for ways to help my team, business teams, and ad hoc measures of various vendors, contractors and internal team members. A book that is required reading is *I.T. Wars: Managing the Business-Technology Weave in the New Millennium* ([www.nwdocfinder.com/7137](http://www.nwdocfinder.com/7137)). It has a great chapter regarding security (among others).

Particularly when entertaining bids for projects, we ask potential solutions partners to review relevant parts of the book, and it ensures that these agencies understand our values and practices.

The author, David Scott, has an interview ([www.nwdocfinder.com/7138](http://www.nwdocfinder.com/7138)) that is a great exposure.

John Franks

Discuss at [www.nwdocfinder.com/7139](http://www.nwdocfinder.com/7139)

## Good idea, poor execution

Re: Arrogance or efficiency? Why Microsoft redesigned the Office user interface, Part 1 ([www.nwdocfinder.com/7140](http://www.nwdocfinder.com/7140)):

As I recall, the reason MS did the new user interface was that they were getting a lot of requests (about 90%) that certain features be added that turned out to already be in the software. So, the intent was to better expose some of the buried functionality. Apparently, they didn't do that good of a job.

Morris Cox

Discuss at [www.nwdocfinder.com/7141](http://www.nwdocfinder.com/7141)

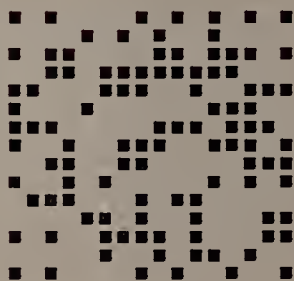
## Social-networking safety tips

Re: 12 tips for social networking ([www.nwdocfinder.com/7142](http://www.nwdocfinder.com/7142)):

A one-liner synthesizing much of the article

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would be, "When in doubt don't post it" or "Be paranoid, be very paranoid."

Another consideration for social networks is whether you and your contacts consider it to be more of a professional social network or a network among buds. Better to have two (I'm excluding LinkedIn from this) than to think one will suffice).

At an academic networking function I recently attended, more than one recent grad in the audience looked disappointed when a lecturer recommended they start fresh with a new social-networking account rather than just extending their use of the one they were using in college.

Craig Kensek

Discuss at [www.nwdocfinder.com/7143](http://www.nwdocfinder.com/7143)

## No Wi-Fi? No sale!

Re: BlackBerry Storm: Why no Wi-Fi? ([www.nwdocfinder.com/7144](http://www.nwdocfinder.com/7144)):

I was holding off switching our company's 400+ cell-phone account to AT&T, on just one issue that was most important to our employees and management — Wi-Fi.

Now that we've heard for sure Verizon and Vodafone are not including this must-have, basic feature for 2008, we're signing with AT&T.

The cost savings alone for the first year on the data plan (because of no Wi-Fi) will pay for the switch. Verizon and Vodafone are very shortsighted and greedy — trying to force everyone onto their overpriced data plan.

It makes our decision easy: No Wi-Fi? No sale!

Kevin Greene

I've been patiently waiting for the iPhone killer. I don't need a BlackBerry if it won't live up to my needs. My Verizon contract runs out end-of-year. I'll definitely move to Sprint if Wi-Fi is not made available. Sprint offers much more for far less cost.

Ron Racine

Discuss at [www.nwdocfinder.com/7144](http://www.nwdocfinder.com/7144)

## SIEM's like a good idea

Re: SIEM tools come up short ([www.nwdocfinder.com/7145](http://www.nwdocfinder.com/7145)):

Few people understand how to integrate SIEM and see its full potential. When done properly, it is a form of art that delivers unprecedented improvements across all lines of business.

Matt Roedell

Discuss at [www.nwdocfinder.com/7146](http://www.nwdocfinder.com/7146)

E-mail letters to [jdix@nww.com](mailto:jdix@nww.com) or send them to John Dix, editor in chief, Network World, 492 Old Connecticut Path, Framingham, MA 01701-9002. Please include phone number and address for verification

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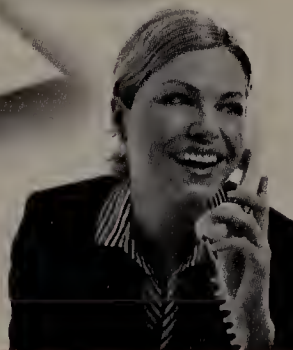
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# BLOGOSPHERE

■ **A virtual discussion.** Chip Wenz explores virtualization on his Microsoft Training Insider blog: "Among the advantages that you receive by consolidating your server can be applied directly to your bottom line. If you currently have 24 servers in your data center; with virtualization you can reduce that number to 3. With fewer servers to purchase and maintain the savings can add up pretty quickly. Also because you are using fewer servers to do the same amount of work as before, you will also see a savings on electricity and cooling in your data centers." [www.nwdocfinder.com/7152](http://www.nwdocfinder.com/7152)

■ **Patience is a virtue these days.** Andrew Mikols offers three job tips for tough times on his Windows Job Market blog, including: "If you are employed in a failing company or troubled sector, don't wait to get laid off. Do all the things listed above proactively. It's easier to find a job when you have a job, so take advantage of that before it's too late. If you are employed at a stable company that is able to weather the storm, then count your blessings and don't do something stupid like leaving for a less stable company and a 10% raise. I have a friend who made this mistake a few weeks ago, and he was laid off from his new company in less than a week. It wasn't much fun, especially since he was the only wage earner for his family." [www.nwdocfinder.com/7153](http://www.nwdocfinder.com/7153)

■ **Use those tools.** On A World of Bytes, Curt Monash digs out a nugget on how eBay improved its data center efficiency dramatically through standard server monitoring tools: "eBay did this in the usual way, identifying and eliminating bottlenecks. It is interesting how they found the bottlenecks. They banded network event data into a data warehouse, then used standard analytic tools to extract results." [www.nwdocfinder.com/7154](http://www.nwdocfinder.com/7154)

■ **At least it means job security.** That's Noah Schiffman's conclusion after writing an overview, on Security Phreak, of the never-ending problem of application holes: "Despite advances in security and patch management, little has changed over time. Rapid progress in information technology has created innovations in access to resources, provided rich platforms for creative development and revolutionized the human computer interactive experience. Unfortunately, the competitive business pressures of release-to-market deadlines produce products deficient in quality assurance and inadequate security testing." [www.nwdocfinder.com/7155](http://www.nwdocfinder.com/7155)

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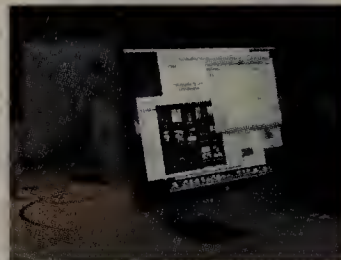
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### iPhone app: Wikipedian

The Wikipedian app makes it easy to look up information on Wikipedia without having to open the browser app. [www.nwdocfinder.com/7165](http://www.nwdocfinder.com/7165)

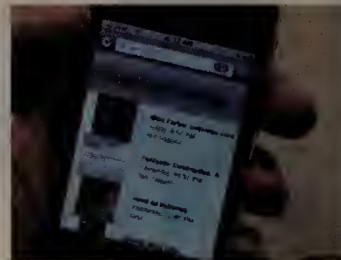
## IDG NEWS WIRE:



### Apple revamps MacBook line

Apple CEO Steve Jobs announced changes to MacBook Pro, MacBook and MacBook Air laptops at Apple's headquarters in California. [www.nwdocfinder.com/7166](http://www.nwdocfinder.com/7166)

## GADGETS:



### iPhone App: Evernote

View notes, add notes and keep yourself organized right from the phone. [www.nwdocfinder.com/7167](http://www.nwdocfinder.com/7167)

## BEST OF NWW'S NEWSLETTERS

# Flood experience led to better disaster planning

**Tech exec:** In 2001, Tropical Storm Allison stalled over southeast Texas and dropped more than 35 inches of rain in the state over a span of a week. The city of Houston experienced unprecedented flooding, but especially hard hit were the major business and medical districts. In addition, virtually every major roadway was impassible due to high water. Software company NetIQ fell victim to Allison's flood waters when the bottom floor of the company's office building was submerged and electrical equipment was destroyed. This left the building — and NetIQ — without power for a week. Though the company brought in generators that would power some office equipment such as phones, NetIQ was forced to limp along in a reduced capacity while still trying to support business operations. And with the widespread street flooding, employees couldn't get to the office to do their jobs. NetIQ's vice president of IT Dohsung Yum vowed to have a strong disaster recovery/business continuity plan in place for the next emergency. Hurricane Rita in 2005 gave him a chance to practice the plan, but Hurricane Ike in 2008 proved to be the real test. On Sept. 13, Ike knocked out power to more than 2.6 million Houston area businesses and residences, including the

building NetIQ occupies. This time, Yum says, his company was prepared. [www.nwdocfinder.com/7148](http://www.nwdocfinder.com/7148)

**Network management:** The economic turmoil tormenting Wall Streeters is also trickling down to IT departments. The recent deluge of financial failures is causing enterprise IT executives to reconsider spending on new investments and avoid hiring additional staff in the coming months. For instance, a CIO Executive Board survey of 50 IT leaders in September revealed that 61% are re-evaluating 2009 budget plans, 59% are putting nonessential IT projects on hold, 54% are re-evaluating IT project plans to conserve cash and 24% have introduced a hiring freeze in IT. IT managers are being asked to fill the void that anemic IT budgets cannot. "As the economy squeezes, IT professionals are forced to wear more hats than they normally would. Systems administrators are also e-mail admins and virtualization experts while they dabble in PeopleSoft systems," says John Turner, director of networks and systems, Brandeis University. The trend toward IT pros taking on more responsibilities started before the economy took a turn for the worst. [www.nwdocfinder.com/7149](http://www.nwdocfinder.com/7149)



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# Google's Android has its own kill switch

**S**eems as though Google's Android has the same type of so-called remote kill switch that caused such controversy for Apple and its iPhone. In the Android Market terms of service, Google expressly says that it might remotely remove an application from user phones. "Google may discover a product that violates the developer distribution agreement . . . in such an instance, Google retains the right to remotely remove those applications from your device at its sole discretion," the terms, linked to from the phone, read. The G1, the first phone to run the Android software developed by Google, goes on sale Oct. 22, and many people are getting their first in-depth look at it because T-Mobile has loaned the devices to reporters. The Android Market is the online store accessible from the phone where users can download applications. [www.nwdocfinder.com/7157](http://www.nwdocfinder.com/7157)



**FCC chairman supports use of 'white spaces'.** Federal Communications Commission Chairman Kevin Martin said last week that he will support allowing conditional unlicensed use of the so-called "white spaces" television spectrum. During a press conference, Martin said that he was proposing to let carriers and other vendors deploy devices in white space spectrum, which operates unlicensed at powers of 100 milliwatts. His proposal would also permit use of white space on channels adjacent to existing television stations at powers of up to 40 milliwatts. The FCC is planning to officially vote on whether to allow unlicensed white space use during its Nov. 4 meeting. The FCC and several wireless carriers and device manufacturers spent the summer testing devices that operate on television white spaces, or pieces of unlicensed spectrum currently unused by television stations on the VHF and UHF frequency bands. [www.nwdocfinder.com/7158](http://www.nwdocfinder.com/7158)

**Intel reports record Q3 revenue.** Intel reported record third-quarter results last week, posting revenue of \$10.2 billion and net income of \$2 billion. Intel's revenue was up 1% and net income up 12% compared with the same quarter in 2007. Intel officials conceded that they don't know what impact the current financial crisis will have on customer demand going forward. They said consumers and businesses may defer IT purchases because of tighter credit, negative financial news and lagging consumer confidence. Because of the uncertainty in global economic conditions, Intel said it would publish a mid-quarter business update on Dec. 4. This information should give the U.S. tech industry a better indi-

cation of how the global economic slowdown is affecting product demand during the fourth quarter. Intel's announcement comes on the heels of a strong performance by IBM, which pre-announced its quarterly earnings last week amid the deepening economic gloom. IBM's revenues were up 5% to \$25.3 billion, and its net income was up 20% to \$2.8 billion. [www.nwdocfinder.com/7159](http://www.nwdocfinder.com/7159)

**Cisco iPrize goes to energy-efficient power grid.** Cisco is planning to back technology that's designed to reduce energy consumption within electrical grids. Two students and a systems engineer came up with the idea, which won Cisco's iPrize contest. The winning idea will be nurtured by Cisco and, the company hopes, be turned into a billion-dollar business. Cisco is being deliberately vague about the details of the winning idea because it wants to make money off it, as well as discourage other from trying to exploit it. But a spokesman says the idea calls for making electrical grids more efficient so less energy is wasted, efficiency that could be pushed to homes. The idea calls for using Cisco infrastructure in the grids to promote efficiency, the spokesman says. In fashioning the winning entry, Anna Gossen, a computer science student at the Karlsruhe University in Germany, teamed up with her husband and brother. [www.nwdocfinder.com/7160](http://www.nwdocfinder.com/7160)

**Federal employees lack tools for mobile work.** Federal employees are becoming more mobile, but government agencies are missing opportunities to improve employees' productivity when they're working outside the office,

concludes research from the Telework Exchange. Eighty-two percent of federal employees spend work time outside of the office each month, the telework advocacy group found in its survey published last week. Among those, 42% telework at least part time and 20% spend at least a portion of two days per week outside of the office. Among the most productive of these mobile employees are those who use a smartphone for work purposes. Smartphone-carrying mobile employees reported an average time savings/productivity gain of 54 minutes per day. But despite the productivity advantage, 66% of federal employees who report some mobility do not currently have a smartphone, the Telework Exchange found.

[www.nwdocfinder.com/7161](http://www.nwdocfinder.com/7161)

**Ballmer's tongue again causes trouble for Microsoft.** Microsoft late last week issued a statement saying it still has no interest in Yahoo after CEO Steve Ballmer said that for shareholders a deal would make economic sense. The company issued a terse statement to media around mid-day: "Our position hasn't changed. Microsoft has no interest in acquiring Yahoo; there are no discussions between the companies." Ballmer's words alone were a decent deal for Yahoo shareholders, who saw the stock rise \$2.19 per share in just more than 60 minutes following the CEO's remarks during his appearance at the Gartner Symposium in Florida. In the same time frame, Microsoft stock was up \$2.10. Ballmer has a history of using his tongue to nudge the stock market. In 1999, he told a group of technology journalists that tech stocks were overvalued and lumped Microsoft in that group, even saying the value of his company's stock should be "less." Microsoft stock lost 5.1% that day; it was estimated that Ballmer lost billions on paper, given his stock holdings in the company. [www.nwdocfinder.com/7162](http://www.nwdocfinder.com/7162)

**Hack targets Microsoft Host Integration Server.** Hackers have released code that could be used to take control of a server running Microsoft's Host Integration Server 2006, used to connect mainframe applications to Windows PCs. The software was released last week as part of the Metasploit hacking toolkit. Microsoft released a patch for this flaw last week, as part of its monthly security updates. The bug lies in the SNA (Systems Network Architecture) remote procedure call used by the server to communicate with the mainframe. Normally, this service would be blocked by a firewall and in a typical configuration the attacker would need to have an account on the Host Integration Server in order to launch the attack. However, poorly configured machines, such as test systems, might be vulnerable to an attack. [www.nwdocfinder.com/7163](http://www.nwdocfinder.com/7163)





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# Cybersecurity threats multiply

BY JOHN COX

The annual report from Georgia Tech Information Security Center identifies five evolving cybersecurity threats, and the news is not good.

GTISC interviewed a range of industry security experts to explore the threats and the available countermeasures. The five are malware, botnets, cyberwarfare, threats to VoIP and mobile devices, and the "evolving cybercrime economy."

In all five areas, attackers are becoming increasingly sophisticated, increasingly subtle and increasingly adept at exploiting new Web developments, such as the rise of social networking sites. Industry and government need to become equally concerted and sophisticated to contain these threats if the Internet is to be a trusted communications medium.

The just-released report, "Emerging Cyber Threats Report for 2009: Mobility and Questions of Responsibility will Drive Cyber Threats in 2009 and Beyond," explains that malware development expertise is rapidly maturing, skills that are perfectly suited to exploit the continued weaknesses of poorly configured Web sites, especially social networking sites. The report cited Ryan Naraine, security evangelist for Kaspersky, as predicting a 10-fold increase in malware objects detected in 2008.

"As cybercriminals move beyond mass-distribution-style phishing scams, they are learning how to localize and personalize their attacks for better penetration," the GTISC report says. "Social networking sites like MySpace, Facebook and others will likely be used as delivery mechanisms to get unsuspecting users to a malicious Web site link in order to deliver malware."

As an example, the report described an exploit that sends a Facebook message from one friend to another, about a YouTube video, including a link to the clip. The recipient clicks on the link, sees a prompt to download an updated version of the Flash player to run the clip. When the recipient clicks on the update, it installs malware on his computer.

Another weakness that malware continues to exploit is the delay in patching and updating software on enterprise computers. Kaspersky's Naraine says the average corporation takes three to five months to apply a Windows patch everywhere, giving that much more time for malware programs and the botnets that they call into being to take advantage of known weaknesses.

## Botnets

Researchers at GTISC estimate that 15% of online computers in 2008 will become part of botnets — infected with code that effectively puts them under the control of a remote botmaster. That's up from an estimated 10% in 2007.

One massive recent botnet was created by an 18-year-old New Zealander.

Infections can occur even through legitimate Web sites, botnet delivery mechanisms are becoming more sophisticated and subtle, and users don't have to actually do anything except load a Web page in order to enable botnet infections.

Uncovering bot communications is extremely difficult, according to Wenke Lee, an associate professor at GTISC and a leading botnet researcher. "It's very difficult to filter bot traffic at the network edge since it uses HTTP and every enterprise allows HTTP traffic," Lee says.

The GTISC report cites a second-quarter 2008 assessment by Panda Labs, which found 10 million bot computers were used to distribute spam and malware over the Internet every day.

## Cyberwar

One of the most troubling sections in the report deals with cyberwar: the deliberate use by one nation of computer technology to weaken, cripple or confuse an enemy nation's military, economic and infrastructure assets.

The report cites the work of Don Jackson, director of threat intelligence for SecureWorks, in compiling research that implicates the Russian government in cyberattacks against Georgia just a few months ago. For example, most Georgian Internet traffic is routed through Turkey and Russia. As of Aug. 10, 2008, the day after the Russian Air Force was given the green light for air attacks, traffic routed through Turkey was almost completely blocked, and IP traffic through Russia "was slow and effectively unusable," according to the GTISC report.

Estonia faced cyberattacks in 2007.

We can expect such attacks to increase. Jon Ramsey, CTO for SecureWorks, says there are several reasons why: such attacks are inexpensive to mount compared with conventional warfighting; cyberdefenses are weak or nonexistent; the Internet offers "plausible deniability" for attackers; there are no "rules of engagement" to govern such cyberconflicts among nations.

## VoIP and mobile devices

VoIP traffic, like e-mail, will be targeted for fraud, theft and other scams. As wireless VoIP expands, denial of service becomes more than an inconvenience: in the case of a service provider, an attacker could attempt to blackmail the provider with widespread voice disruption, according to Tom Cross, a researcher with the IBM Internet Security Systems X-Force team.

Mobile devices will draw cybercriminals as the handhelds are used more often for transacting business and accessing sensitive data such as credit reports, according to Dave Amster, vice president of security investigations for Equifax. One prospect is that smartphones

will be targeted for immense malware driven mobile botnets.

The lack of open security standards in mobility is actually a good thing, because it provides industry players the chance to develop and apply them comprehensively, an opportunity missed for PCs, according to the report.

## Cybercrime

Cybercriminals are increasingly professional, organized and profit-driven, the report says. It notes that would-be criminals can buy, lease, subscribe or pay-as-you-go to obtain the latest in malware kits, complete with product guarantees and even service-level agreements. According to one researcher in the report, a few even have multiple-language customer support.

The costs of cybercrime to business are mounting.

Gunter Ollmann, chief security strategist for IBM Internet Security Systems, identifies three tiers in this unfolding criminal industry: low-level criminals who buy and use kits to execute specific crimes; skilled developers, often in groups, working to develop new components for their commercial malware-creation products; and "managed service providers" that can apply and sustain malware attacks on a global scale.

Meeting these threats will require a three-pronged initiative, according to GTISC. ■

# InBrief

## Ex-Enron Broadband exec pleads guilty

You can add fraudulently marketing its broadband services to Enron's lengthy list of crimes. The Justice Department announced last week that Joseph Hirko, the former co-CEO of Enron Broadband services, has pleaded guilty to one count of wire fraud before the U.S. District Court in Houston. Under a plea agreement reached between Hirko and the court, the former Enron executive will face a sentence of up to 16 months in prison and will have to pay a fine up to \$250,000. Additionally, Hirko has pledged to fully cooperate with the government's continued criminal investigation of Enron Broadband Services and to forfeit roughly \$8.7 million in restitution to former investors through the SEC's Enron Fair Fund. Essentially, Hirko has pleaded guilty to falsely representing Enron Broadband's progress in deploying and activating its broadband operating system in 2000.



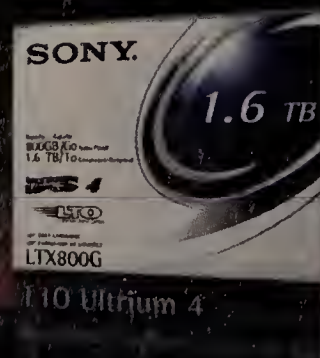
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# Can outsourcers survive the economic storm?

BY DENISE DUBIE

IT service spending might not feel drastic cuts as high-tech leaders consider shaving dollars off their budgets, because outsourcers and service providers could help them contain costs and streamline operations, industry analysts say.

A majority of IT executives report they are re-assessing how to invest what's left of their 2008 IT budgets. Many have decided to cut overall IT spending, but relatively fewer are reducing the amount they put toward outsourcing IT services, according to Forrester Research. A recent Forrester survey shows that although 46% of 258 Global 2000 enterprises have cut back their IT budgets already, only 21% have cut back on their IT services spending (see graphic).

"The primary value proposition of a good IT services deal for enterprise IT buyers is lowered costs, improved processes and streamlined operations," says Paul Roehrig, principal analyst at Forrester. That means IT executives who invest in outsourcing now will continue that trend during cost-cutting times, and companies that previously might not have considered sending IT services to an external provider might turn to the delivery model to avoid adding head count or investing in new technology. "For the enterprise, outsourcing could help the total spending go down, even though outsourcing revenue for the service provider would go up," Roehrig says.

For instance, despite reported softness in the third quarter, global sourcing advisory firm TPI North America anticipates 2008 to outperform 2007 in the number of outsourcing contracts awarded. That number is up 5% this year compared to last year, and the total contract value of the deals is up 19%. TPI estimates that the global outsourcing market will reach \$88 billion in 2008, up 10% from the previous year. Specifically, business process outsourcing is expected to increase 14% to \$22 billion, and IT outsourcing is forecast to increase about 9%, bringing revenue to \$66 billion.

"Infrastructure-oriented management of servers, desktops and other IT components is expected to go unchanged, but application development work could be impacted. There will be a downturn in discretionary projects in the short term, but application maintenance won't be affected," says Brian Smith, partner and managing director of financial services operations for TPI.

Still, the outsourcing industry won't go completely unscathed, according to TPI, which reports that the number of outsourcing deals overall dropped 22% from the second to the third quarter this year. The firm attributes

that drop to IT executive caution in late 2007 and a lessened demand in the financial services industry. Still, TPI says it doesn't anticipate certain types of sourcing deals to be cut in reaction to more recent economic woes.

"Because the value for much of outsourcing is efficiency and process management, we don't see any reason the economy would significantly negatively affect those deals," Smith says. "Our view is that the same pattern of activity we've seen in 2008 will repeat in 2009."

Outsourcing deals may continue to multiply, but that doesn't mean that the nature of outsourcing deals won't change — and in some cases, to the benefit of enterprise IT buyers. TPI notes that the trend to large, multiyear, billion-dollar outsourcing deals is on the downturn and more targeted, specialized contracts are becoming the norm. Industry watchers attribute this shift to public failures of comprehensive outsourcing contracts and to enterprise IT being more strategic in the functions it performs in-house. "Comprehensive deals aren't as common, and there is a danger to having too many vendor contracts, but generally IT is being more selective on the services it sends out," Forrester's Roehrig says. "Smart execs are using IT services not merely to manage technology plumbing but also to profoundly affect business performance."

Activity in the outsourcing market is "higher than ever, but the deal size has changed," says David Etzler, CEO of OutsourceWorld. The seventh annual OutsourceWorld was held last week in New York and drew about 1,000 attendees looking to learn more about their sourcing options. From talking with CIOs there, he says he discovered companies are learning they don't need to put all their functions under one umbrella with a single provider, and many are opting to pick and choose outsourcers that best address specific needs.

"Because of the events of Wall Street, companies are in a complete state of shock but realizing they need to be strategic and look more closely at what their core components are," Etzler says. "The risks they are taking with outsourcers are smaller but more focused on what can really bring gains to the business."

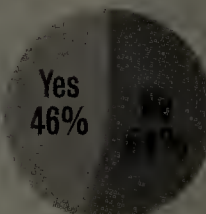
Another benefit of more selective outsourcing deals is that IT buyers can negotiate better contracts with service providers, especially in the down economy. "The smart service providers understand that this is the worst economic crisis since the Depression, and ultimately they will be hurting too," Forrester's Roehrig says. "If they can offer enterprises a way to contain costs while improving businesses, they will be able to prove their worth in the long haul." ■

## Outsourcing suffers lesser blow in budget cuts

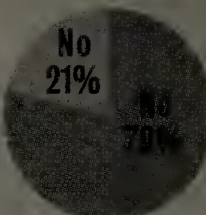
A survey of 258 Global 2000 enterprises shows many have begun to cut IT spending but fewer are pulling back on outsourcing.

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We have cut back our IT budget already:

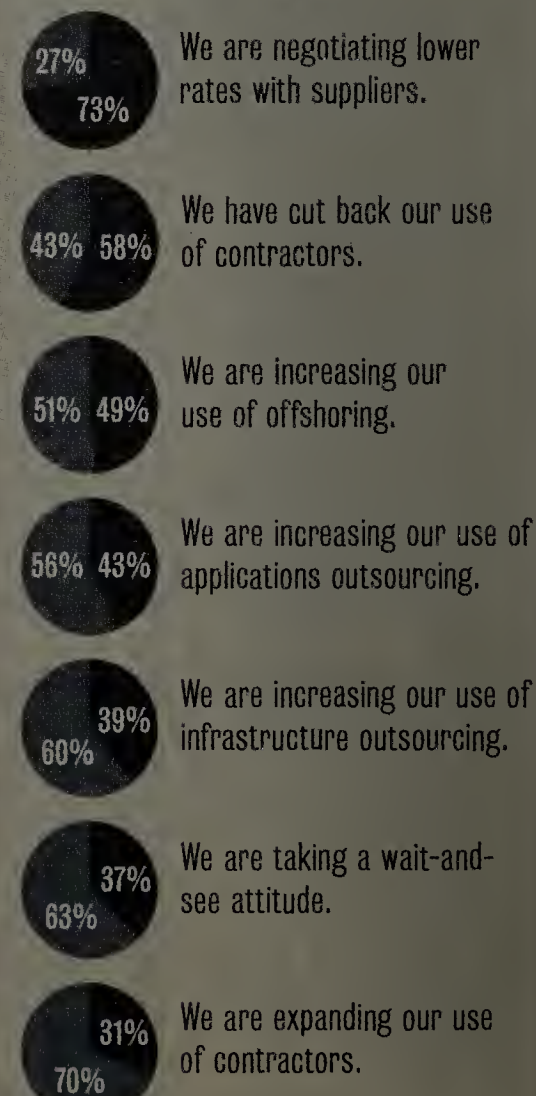


We have cut back on services spending:



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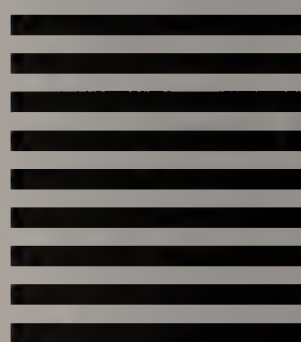
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## Virtualization is here to stay.

And it's no wonder - it saves space and energy while letting you maximize your IT resources. But smaller footprints can come at a cost. Virtualized servers, even at 50% capacity, require special attention to cooling, no matter their size or their location.

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2. **Inefficiency** Perimeter cooling can't reach heat deep in the racks. And over-cooling is expensive and ineffective.
3. **Power Events** Virtual loads move constantly, making it hard to predict available power and cooling, risking damage to your network.

## The right-sized way to virtualize.

With the new HD-Ready InfraStruXure® architecture, you can take on high density by cooling the virtualized high-density row, controlling power at the rack level, and managing the system with advanced software and simulation. Though virtualizing saves energy, true efficiency also depends on the relative efficiencies of power, cooling, and servers. Right-sizing one and not the others (See Figure 1) leaves efficiency savings on the table. To right-size, depend on the efficient, modular HD-Ready InfraStruXure and neutralize heat at the source. Equipment will be safer and more efficient running closer to 100% capacity.

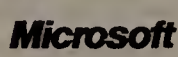
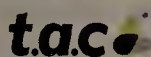
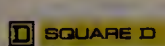
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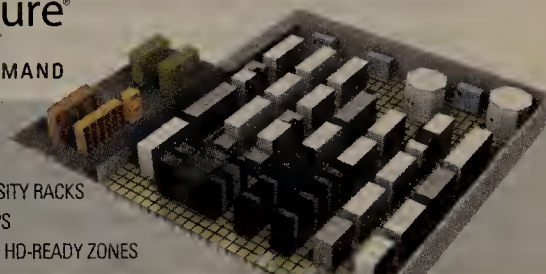


Figure 1

## Efficiency and Virtualization

Your servers are efficient, but is your power and cooling?

- COOLING USAGE/CAPACITY
- SERVERS
- POWER USAGE/CAPACITY

### Pre-Server Virtualization

Big gains could be made with both server and power and cooling.

- ☐ Correct Server Utilization
- ☐ Correct-sized Power
- ☐ Correct-sized Cooling



29%  
Efficiency

### Post-Server Virtualization

Grossly oversized power and cooling cancels out potential gains made by virtualizing.

- ☒ Correct Server Utilization
- ☐ Correct-sized Power
- ☐ Correct-sized Cooling

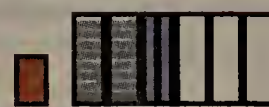


16%  
Efficiency

### Server Virtualization with Power and Cooling

Right-sized power and cooling tip the balance back in your favor.

- ☒ Correct Server Utilization
- ☒ Correct-sized Power
- ☒ Correct-sized Cooling



78%  
Efficiency

The 13,000 square foot APC InfraStruXure® hot aisle containment compute space had a measured Data Center Efficiency DCiE of 78% (PUE 1.28)



by Schneider Electric



# Gartner: Top 20 ways to tighten IT

Re-examining cell phone plan costs, virtualizing servers among keys

BY NEAL WEINBERG

ORLANDO — In tough economic times, all enterprise departments are required to tighten their belts. To help IT executives navigate through the cost-cutting maze, Gartner analysts last week presented a list of 20 ways they can slash expenses.

1. The most obvious place to start is people costs. Gartner estimates that 37% of the average IT budget is dedicated to personnel, so this represents a major opportunity to save money. Gartner recommends a blend of hiring freezes, reducing or eliminating special bonuses, and cutting back on outside contractors. Also, global companies that have opened offices in remote areas should consider bringing those workers home.

2. Flatten the organization. Instead of having one person manage six or seven employees, trim some of that middle management and have your IT execs manage approximately 20 people. A flat organization not only saves money but also can lead to more efficiency.

3. Move to shared services. Consolidate such things as help desk into one group that services the entire company.

4. Even if you have to borrow somebody from another part of the company, bring a

finance person into your leadership team to analyze your budget and help you trim costs.

5. Don't ignore "unmanaged" costs, such as printers or data-center power.

6. Check your invoices to make sure your vendors are charging you what your contract specifies. For example, your wireless vendor agreed to give you free shipping when it sends new cell phones to remote workers, but a few months later, shipping charges start appearing on your cell phone bill. If you don't check, you'll never know.

7. Eliminate unused software and modules.

8. Get tougher with vendors when it comes to negotiating contracts. Don't be afraid to switch vendors, or at least go the first step of determining what it would cost to switch.

9. Buy a telecommunications expense-management service. It pays for itself and more.

10. Deploy a corporatewide plan for buying cell phones, then buy a cell phone plan that optimizes expenses. This will be less expensive than letting employees buy phones and plans, then expense them.

11. If there are places you don't need five-nines of availability, settle for three-nines. It will save you money when you negotiate with your vendor.

12. Consider buying a videoconferencing unit rather than constantly renting.

13. Where possible, replace expensive WAN transport services with the Internet.

14. Defer moving to Vista. If your PC hardware is holding up, consider sticking with it.

15. Use commodity products wherever possible, and skip best-of-breed in cases where "best of need" will suffice.

16. Consolidate and virtualize servers.

17. Reduce storage costs via data deduplication and other methods.

18. Use better processes and policies to make better use of existing tools.

19. Deploy IP telephony and VoIP to cut costs for moves, adds and changes.

20. Harvest unused software licenses and re-use them for new-employee requests. ■

## ONLINE: Another Gartner list

Gartner was big on issuing lists last week, also revealing its list of the 10 most important strategic technologies for 2009.

[www.nwdocfinder.com/7147](http://www.nwdocfinder.com/7147)

## Cisco offers public TelePresence

BY STEPHEN LAWSON, IDG NEWS SERVICE

Cisco and Tata Communications have expanded a network of public TelePresence meeting centers to the United States and United Kingdom, and plan to set up 100 of the high-end videoconferencing centers around the world by the end of next year.

Tata, an India-based telecommunications carrier, opened five of the centers in India earlier this year. They are available by the hour for meetings between individuals or companies that can't or don't want to invest in their own TelePresence systems. Tata operates the facilities and uses its international backbone network to link them.

TelePresence is a conference system that includes high-quality video and audio, as well as presentations. It comes in configurations that range from a single screen for a home or branch office to a three-screen setup with two rows of seats. Prices range from \$34,900 to \$349,000. It is a major focus for Cisco, which has said it uses about 300 TelePresence systems internally.

Tata has now set up public TelePresence sites at Taj-brand hotels in London and Boston, and

the companies held a media briefing Tuesday at another public center in the headquarters of Cisco's WebEx division in Santa Clara, Calif. The facilities are available for booking, with rates from \$299 to \$899 per hour, depending on room size. The Santa Clara facility has seven conference rooms for meetings with up to 18 participants. Before customers go into the meeting rooms, they can familiarize themselves with the city from which their counterparts will be joining them, with local weather and news and Webcam images.

Cisco says it has sold about 1,000 TelePresence systems to approximately 200 customers, chiefly large enterprises. The public suites are ideal for small and midsize businesses that can't afford the capital investment, but also for large enterprises that want to meet virtually with partners, the company says. Although TelePresence interoperates with other videoconferencing systems, quality and ease of use are best in sessions between Cisco units, says Marthin De Beer, senior vice president and general manager of Cisco's Emerging Technologies Group.

The 100 sites to be open by the end of 2009 will be distributed across six continents, but

not all the locations have been chosen yet, says Peter Quinlan, director of TelePresence Managed Services at Tata. The carrier plans to target major business centers but also locations that are important to business and are hard to reach because of distance, poor infrastructure or security issues, he says.

Cisco plans to tighten interoperability with meeting systems from such rivals as HP, Tandberg and Polycom, De Beer says. Tata has an interest in improved interoperability, because that would increase opportunities for high-quality conferences between the public Cisco TelePresence suites and existing corporate systems from other vendors, Quinlan says.

High-quality virtual meetings can take the place of many in-person meetings, not only saving travel time and expense but allowing companies to move more quickly, according to Cisco. For example, product development teams spread across the world can collaborate more frequently and companies can more quickly close a deal with a potential customer by getting top executives in a meeting on less notice. De Beer also expects consumers to use the suites on weekends to get together with family and friends far away. ■





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# GPS chips get sophisticated

BY JOHN COX

Ever wonder how that GPS chip in your cell phone or personal navigation device or some other gizmo used by your field workers knows how to find the orbiting satellites and grab their positioning data? It has to hunt for them, and that's where a number of frustrating GPS problems lie. To solve them, a group of service providers, including U.S. silicon vendor Broadcom, are using different techniques to augment the basic GPS satellite system.

To hunt for the several navigation satellites it needs, a GPS chip first needs information about the satellites, especially their orbits. Then it uses that information to find their signal and download their ranges and positions at a given point in time. Only then can the chip crunch the data and plot its own longitude and latitude.

This process, especially the first step, takes time, which can stretch to minutes. On top of that, if the satellite signal is weak or the GPS chip is indoors or out of range, the device won't be able to collect that initial data at all. And if even one bit is dropped during transmission from space, the whole process has to start again — unless you can make use of a kind of GPS system for the satellites themselves: some data that tells the GPS chip in your handset, in effect, "look here for this satellite, and here for this other one." Such a system could slash the time needed for that first fix to seconds, and provide the necessary starting data where a signal might be too weak to pull it down.

It turns out there are systems that in various ways augment data from navigation satellites. The augmentations are used to slash the time for the initial location fix; to correct for the impact of such variables as transmission delay created by distortions in the ionosphere and troposphere, "clock drift" onboard the satellites, even tidal fluctuations; to increase precision to inches instead of yards; or a combination of these.

Differential GPS systems focus on high precision. One of the best known is NASA's Global Differential GPS System, developed originally by the Jet Propulsion Laboratory (JPL), run by the California Institute of Technology under a NASA contract. NASA claims it's the biggest such network, originally built to support its own terrestrial, airborne and space operations, but now available to government and com-

mercial customers. Some are mainly research oriented, like that of NASA's JPL.

Another example, using a different approach, is the StarFire Network from Navcom Technology (now a unit of John Deere Co.), which specializes in very-high-precision (10 centimeters) GPS applications, such as for land and aerial surveying, precision agriculture, and machine control.

Broadcom's WorldWide Reference Network was launched in 2000, created by Global Locate, which was itself an early GPS chip start-up. Global Locate realized it needed a reference network to create a reliable, consistent and fast source of orbit-tracking data if the chips were to deliver the goods, says David Murray, director of marketing with Broadcom's GPS products group.

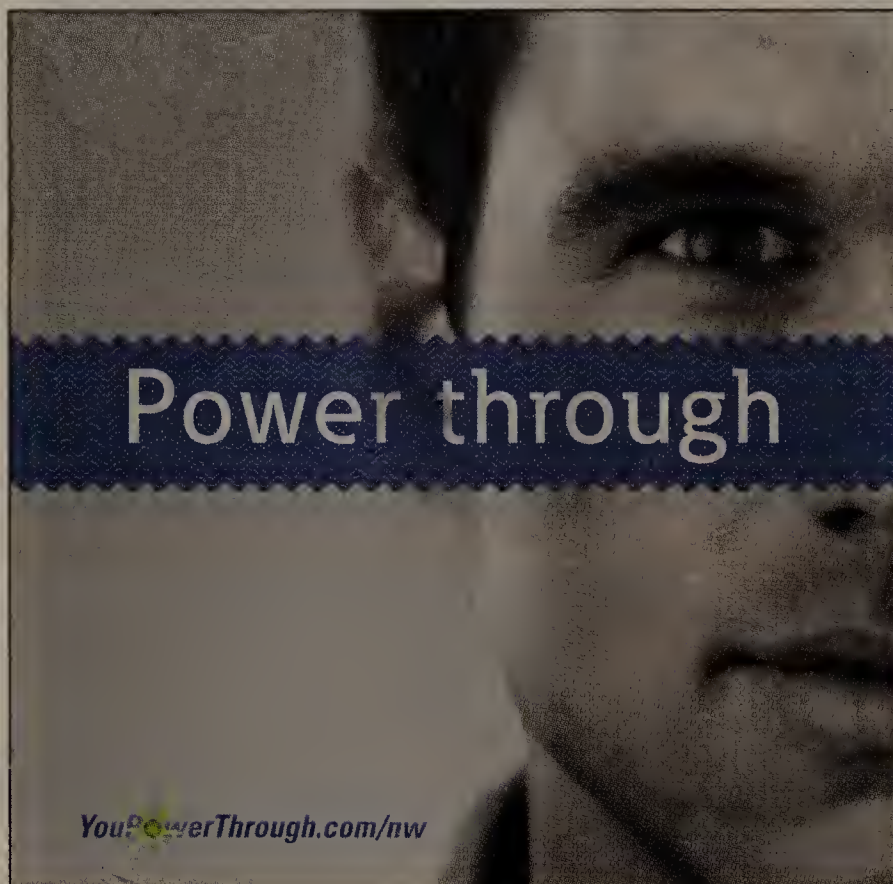
Broadcom's network consists of a global chain of GPS receivers at ground stations, clustered around the earth's equator. The vendor won't say how many receivers or stations it has, only that there are at least three receivers continuously tracking the 28 satellites now in orbit, Murray says.

The receivers monitor the GPS satellites and track their orbits, feeding data in real time to two redundant servers, one in New Jersey, one in New York, run by a third-party data-center operator. Today, about 20 million devices access this data via an IP connection, eliminating the slow process of satellite hunting, and creating almost immediate fixes. Broadcom charges for the service, which usually is bought by carriers or handset makers, and which works with other brands of GPS chips.

Here's how the service works. A fleet driver needs to find the closest service station that has a contract with his company for diesel fuel. He pulls out his company smartphone and presses an icon to load Google Maps. The phone has a small application that uses an industry protocol, Secure User Plane Location, to access the Broadcom reference network via an IP connection, and request the orbital data. That takes eight to 10 seconds, Murray says. Once it knows where to find the satellites, the GPS chip can get the range and

timing data it needs in a couple of seconds.

That speed and reliability is critical. Second-generation cellular networks support e911 emergency calls by using a triangulation technique based on cell phone tower signals to calculate a rough location, Murray says. But 3G networks use the much more precise GPS, which can narrow the position to within a few meters. Broadcom supports both techniques, part of a plan to create a service that eventually will automatically use several techniques to locate a mobile device, depending on the precision needed and on the availability of the various techniques. ■



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What's called "assisted GPS," however, doesn't aspire to this level of accuracy. Instead, these services typically use the standard satellite signal to help client GPS chips get that initial orbital data faster or more reliably or both. Usually these services are aimed at cellular carriers or device makers.

One provider of assisted GPS is Broadcom, the big U.S. silicon manufacturer whose inventory includes GPS chips. Other providers include Andrew Wireless Solutions, a division of CommScope, with its Geometrix MLC service, and TeleCommunication Systems (TCS), with its Xypoint service.



# Data boom spells storage overhaul

BY JON BRODKIN

Exploding amounts of digital information and an ongoing transition to a so-called "information economy" will require a new, more holistic approach to storage, speakers at last week's Storage Networking World conference said.

Just as businesses employ a CFO to make money, save money and stay out of legal trouble, enterprises will need an executive focused on the risks and rewards of handling digital information, said Chuck Hollis, global marketing chief technology officer at EMC.

A good CFO leverages a company's economic portfolio as an asset, and "I'm starting to see more and more CIOs that see their job the same way, but around information," Hollis said.

Hollis was one of numerous speakers at the conference in Dallas this week, hosted by *Computerworld* and the Storage Networking Industry Association.

Information is fast becoming the world's "single most valuable asset," Hollis said. As such, it's important to oversee the entire information portfolio, understand where it's being stored, how it's being used, and to stay out of trouble by complying with all security and data retention regulations. Hollis also predicted that consumers are going to demand ever more detail about their personal information and where it's being stored, and will want as much control over that information as they have over their personal finances.

"I think the next five years are going to be more interesting than the last 20 years put together," Hollis said. "We're becoming an information economy."

More than 369 exabytes of information have been created since the beginning of 2008, more than double the amount in all of 2006, according to EMC's Digital Footprint Calculator.

Data creation is growing by 60% each year, in good economic times and bad, Hollis noted. Another speaker, Madge Meyer, executive vice president and head of global infrastructure services at State Street Corp. in Boston, said her organization acquires 40TB of new information each month.

The burden is falling heavily on storage administrators, particularly when it comes to securing all this information, said IT industry consultant Richard Austin.

"The information that has become the crown jewels of the modern enterprise is completely coming under the control and responsibility [of storage professionals]," he said.

Even as storage costs go down on a per-byte basis, businesses are spending more on storage each year because of data growth and power consumption. Diane Bryant, vice president and CIO of Intel, said her company predicts it will

latter of which prevents over-allocation of storage, also is in the works, Bryant said.

Intel is further trying to cut costs by using tiers of storage, because not all applications need ultra-fast access to information. Solid-state disk, for example, is devoted to the applications requiring the highest performance and reliability, while optical tape is set aside for bulk storage, Bryant said.

There are numerous roadblocks preventing optimal handling of data, from aging equipment to lack of mobility and low storage utilization rates, noted speaker Jack Domme, COO of Hitachi Data Systems. Complicating matters is the poor economy, which has business executives demanding spending reductions.

Costs can be reduced significantly by improving data mobility with storage virtualization, use of thin provisioning and lower-cost storage tiers, as well as de-duplication and archival of "stale" data that's rarely accessed, Domme said. "We all know our utilization rates of our assets, our data and our storage are fairly low," he said. "Everywhere I go [people say] the key is utilization increase."

It's also crucial not to store redundant copies of data, Wayne Adams, an EMC official and chairman of the Storage Networking Industry Association, said in an interview. This requires a close accounting of data and metadata with tagging and search capabilities, allowing all copies of a given piece of data to be deleted at the end of its life cycle, he said.

While many of these measures can be deployed immediately, Xiotech CEO and President Casey Powell predicted a complete revamping of how storage is organized and allocated in the coming years. The storage-area

network won't provide the flexibility needed in the future, he said. Applications themselves must be able to control their own storage resources, automatically provisioning and de-provisioning storage as needed, he added. "We need a system that is integrated to the point that the application, in conjunction with the operating system, controls its own destiny," he said. This will reduce the potential of human error and let storage pros focus on higher-level tasks.

Powell acknowledged this will be difficult, particularly when it comes to creating applications that can control unstructured data. ■



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double its storage spending by 2012. "It's daunting," she said. That type of growth is "not something we have the ability to maintain or support. This is unsustainable."

Increasing complexity of devices, electronic forms of collaboration, the proliferation of the Web as a business tool, and all types of regulations are contributing to the amount of information that enterprises must store, Bryant said.

Intel is creating information life-cycle management policies for all of its data, describing how quickly it must be accessed, how long it must be retained and when it should be deleted. Virtualization and thin provisioning, the



# Symantec details grand plan for product integration

BY ELLEN MESSMER

Symantec last week detailed a plan to further integrate its diverse products under a common management platform, as well as support third-party products by means of its published interfaces.

The Open Collaborative Architecture is a "work in progress" that includes bringing together Symantec's endpoint security suite and backup and recovery products with asset-management offerings obtained via the Altiris acquisition late last year, says Kevin Murray, senior director of product marketing.

The first phase of the plan has already been put in motion, with the Symantec Client Management Suite, the Server Management Suite, and the IT Service and Asset Management Suite supported under the Altiris framework, Murray says. The next version of the Symantec data-leak prevention client is expected to have the Altiris management client embedded by early next year.

Future efforts include bringing Symantec Endpoint Protection, BackUp Exec System and Veritas Configuration Manager under the Open Collaborative Architecture framework. The "center of gravity" in this technical effort lies in a server-based integration technology called Notification Server that will be built into future product offerings, Murray says.

The initiative's other purpose is to provide an open set of APIs and a software development kit that companies can use to provide functional support for their own products under the Symantec management umbrella.

Bit9 and Savant Protection, which offer approaches to application "whitelisting," as well as Dorado Software, a network and services management firm, on Tuesday announced support for the Symantec architecture. The software-developer program grew out of an earlier Altiris partner program.

In addition, Dell is standardizing system management offerings for all of its enterprise-class machines on the Symantec Management Platform. The Dell Management Console will act as a "modular plug-in" to the Symantec platform, according to Dell. HP's client manager also is based on the Symantec architecture, Symantec's Murray says.

Murray acknowledges that Symantec has no announced time frame for reaching its desired goal of this integration effort, which is to be able to provide customers with the option for "a single common console" to manage all Symantec products. ■

# McAfee bolsters network access security

BY TIM GREENE

McAfee is making it possible for customers to enforce network access policies on unmanaged devices, such as laptops owned by visitors or consultants.

The company is announcing that customers now have the option to enforce NAC policies via McAfee's intrusion-prevention system (IPS) appliance known as Network Security Platform (formerly called IntruShield).

So, if an unmanaged device is discovered on the network, the IPS can restrict its network access in accordance with preset policies, for example, allowing the device to gain Internet access but nothing else. Until now, McAfee NAC policies could be enforced only via software on each endpoint, which meant that devices not managed by businesses could not be held to NAC rules.

In the first quarter of 2009, McAfee is expected to introduce a separate appliance dedicated to NAC, so if customers don't want an IPS, they can still enforce NAC policies on unmanaged devices.

That is the biggest benefit of device-based NAC enforcement, says Vinit Duggal, CISO of Intelsat, the \$2.5 billion satellite communications company that already was a customer of McAfee security software. He says that software gives him good visibility into endpoint compliance with NAC rules and finds rogue devices — unmanaged endpoints — that need to be contained.

These devices could include laptops brought onto the network by consultants and vendors or devices owned and installed by employees, Duggal says. Once discovered by the software, an IPS can enforce NAC policies on them.

Duggal likes NAC enforcement on the Network Security Appliance because it can take action directly without requiring intervention from staff. At the same time, McAfee's endpoint NAC agent is useful for managed devices because it can make sure they pass corporate policy health checks, he says.

Enforcing NAC via software and hardware will become a common requirement of businesses buying NAC equipment, says Rob Whiteley, an analyst with Forrester Research. "Unless you have a very narrow need for NAC, then ultimately you're going to need a solution from one vendor or multiple vendors that gives you the flexibility to do either," he says.

A business that just wants to keep guests and visitors off the corporate network but grant them Internet access can get by with a NAC appliance, but appliances don't scale

well for deployment in large organizations, Whiteley says.

Before this hardware announcement, McAfee's NAC options were limited to its Policy Enforcer Agent running on endpoints managed by McAfee's overriding ePolicy Orchestrator (ePO), which also manages McAfee antivirus, antispam and host IPS. If the agent finds a problem, it restricts network connectivity without relying on network infrastructure for enforcement.

McAfee's NAC software also can work with other vendors' NAC gear, including gear from Juniper Networks and Check Point Software, using their products as enforcement points. This gives McAfee parity with other vendors that come at NAC from the hardware side, Whiteley says. McAfee NAC also is compatible with Microsoft's version of the technology called network access protection, so NAP's policy-decision and enforcement mechanisms could be used with McAfee's agent, for example.

The addition of network-based enforcement gives McAfee more options but not necessarily more options than its competitors, Whiteley says. He notes that Juniper can enforce NAC policies at its IPS or firewalls or other switches. Juniper's endpoint NAC client software doesn't do as much as McAfee's, however. "It's not a full protection agent like McAfee's, where you're going to get more comprehensive risk coverage at the endpoint," he says.

Because McAfee's NAC is blended with its ePO, managing NAC falls under an existing management platform, reducing the training needed to keep track of it, and that is important, Intelsat's Duggal says. If he judges that security products by different vendors afford the same degree of protection, he next checks which is simpler to manage in order to decide between them.

Support for NAC on McAfee's IPS is available now. ■



## ONLINE: Q&A

Read our Q&A with McAfee CEO Dave DeWalt about McAfee's

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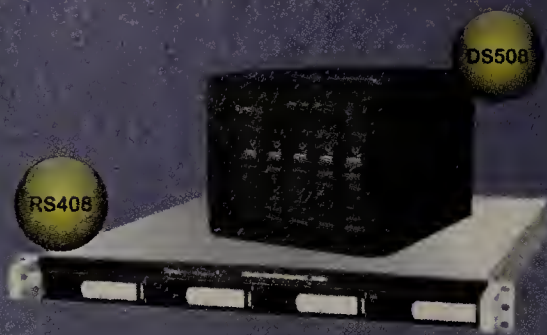
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# How to get special security needs satisfied

## Two IT security pros share advice on getting vendors to work together

BY ELLEN MESSMER

When there's not quite the right fit in network security gear to meet your needs and goals, you might wind up settling for some distant second choice, if one exists. But enterprise technology managers are proving you can get what you want by pushing vendors to innovate — a trend that may be growing because of the economic downturn.

Tony Lucich, CISO and enterprise architect for Orange County, Calif.; and Mark Starry, manager of enterprise architecture and security for Concord Hospital in New Hampshire both hit a few roadblocks during recent security projects. There were incompatibilities between switching and security gear, or security products fell short of accomplishing exactly what was desired. But Lucich and Starry, who don't know each other, share a spirit for overcoming obstacles by getting vendors to innovate to help their organizations.

Some analysts say this willingness to accommodate customers' special needs happens less often in good times, when fat-and-happy vendors are complacent. When bad times arrive, however, customizing is a way to grow market share. "This 'responsiveness' to customers is most important in downturns like we are in now," says Gartner analyst John Pescatore, noting that smaller vendors often take the lead in this regard.

For Starry, the basic challenge was finding a way to comprehensively monitor the complex, high-speed network put in place based on Nortel core routing switches and trunking to link health-care facilities in its New Hampshire locations to share high-speed IP traffic, including VoIP.

Although Concord Hospital already had IBM Internet Security Systems intrusion-detection and -protection systems at the perimeter, this gear wasn't the right choice for monitoring the entire internal network. Starry says that was mainly because the Nortel network, with its Routed Split Multi-Link Trunking, is so good at eliminating bottlenecks, it made collecting security-related information related to packet flows harder to collect, too.

Starry began hunting for security-monitoring equipment that could work inside the new network, narrowing down a short list that included Mazu Networks, Q1 Labs and Lancope. No vendor, however, supported Nortel's proprietary protocol. Cisco's version of NetFlow was the norm.

Starry didn't give up. He discovered that Lancope was willing to update its StealthWatch network behavior-analysis monitoring gear to support Nortel, and he brought Lancope engineers together with Nortel ones to make it happen. This didn't come cheap: Starry says there's

so much additional stress put on switches made to export every session out to a security collector that the switches had to be boosted with special hardware cards that cost upwards of \$100,000.

The month-long development work — which helped Nortel correct a bug in its code — was successful, however, and the security monitoring is working as envisioned, identifying unwanted applications and network usage, Starry says. "With Lancope, we can tell if someone is trying to access that fund-raising server, for instance," Starry says, noting that the comprehensive internal monitoring is a requirement to meet the demands of audit committees.

### Orange County's e-mail encryption plan

For Lucich, the issue was finding encryption and e-mail security vendors to help meet the requirement that the county's 23 agencies, with their 24,000 or so employees, encrypt e-mail containing sensitive data, such as Social Security numbers or financial information.

After a review of encryption possibilities, the county favored the public-key certificate system in Voltage Security's SecureMail, which doesn't require digital certificate distribution. But the county needed to find a way to send all the county e-mail through a common point to be subject to content inspection, as well as blocking inbound spam, Lucich says.

For that, Lucich favored Secure Computing's IronMail appliance (Secure Computing is being acquired by McAfee). Ideally, the county wanted the Voltage SecureMail server and the IronMail gateway appliance to work in harmony so that IronMail could make the decision to encrypt at certain times, even if the county employee had failed to do that manually.

Lucich says he encouraged Secure Computing to figure out how to integrate IronMail with Voltage's SecureMail digital-certificate server and required them to show that was possible before finalizing a contract.

The result was what he wanted, Lucich says: "The true policy engine is in IronMail, which has to scan to decide whether to encrypt. The encryption is with SecureMail because we wanted key management the way Voltage did it." Since the e-mail encryption process went live in June, about 25% of Orange County employees have been trained in how the security method works. ■

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# How bad is U.S. broadband deployment?



**NET INSIDER**  
Scott Bradner

Congress has passed — and the president has signed — the Broadband Data Improvement Act. It may now be possible to get some useful information about where the United States sits in the world when it comes to the deployment and adoption of broadband Internet services. If this turns out to be the case, it will be the first time we would have any real idea.

For reasons best known to itself, the FCC has for years adamantly refused to collect the data necessary to understand the true state of the deployment of broadband Internet service in the United States. Earlier this year the FCC, under the threat that Congress would order it to change its ways, did say it would collect better data in the future.

Even with the somewhat better data there was no good reason to think that the FCC would produce more useful statistics, considering its track record. Now Congress has acted and there is some additional reason to hope.

The recently adopted law is aimed at improving “the quality of federal and state data regarding the availability and quality of broadband services and to promote the deployment of affordable broadband services to all parts of the nation.”

The law mandates some useful ways to attain the first goal but does not do anything useful towards the second other than enable regulators to shame broadband service providers that are not doing a good job.

The law requires the FCC to compile a list of poorly served parts of the country. I guess this is so carriers in those areas can be publicly chastised for their poor behavior.

The law also requires that the FCC figure out how U.S. broadband deployment compares with that in other countries in a systematic, apples-to-apples way. The results of this study will be useful at least to the degree that they may devolve a consistent agreement as to where this country sits. I've seen rankings that vary between No. 8 and 20 in the world — the number seems to heavily depend on the goals of the person quoting it.

The law also requires the FCC to figure out if it would be useful to collect data on the actual speed that customers are getting rather than the fantasy numbers provided by carriers. If feasible to obtain, this value could force truth in advertising — such a concept!

The law also sets up a somewhat fuzzy grant program that would provide funds for broadband development. And the law tries to promote a “safe Internet for children.” But, unlike past efforts that mandate the technically impossible (such as requiring senders to ensure that naughty words never reach the eyes of children as the Communications Decency Act tried to do), this bill mostly relies on education and development of better filtering technology for parents to use. The law does suggest that having ISPs spy on their customers and record their activities would protect kids.

As with most congressional work these days, this bill is a mixed bag, but at least it's only 10 pages long and does not seem to contain any earmarks.

Disclaimer: Not everyone at Harvard is terse, nor does everyone at Harvard get things exactly right but, when something is wrong it's not because someone is running for reelection. In any case, I know of no university opinion on this law, so it must be my own.

*Bradner is Harvard University's technology security officer. He can be reached at [sob@sobco.com](mailto:sob@sobco.com).*

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# A glimpse of the (networked) future



## EYE ON THE CARRIERS

Johna Till Johnson

One of the signs of getting older is the feeling that things were better “back in the day.” I’ve been lucky enough to avoid it, most of the time. OK, I’d like to have tasted Coca-Cola back when it had the original ingredients. And I’ll admit to being a bit nostalgic for the days when you didn’t have to take your shoes off to get on a plane. But overall, it strikes me things are generally better today, from medical advances that didn’t exist three years ago to being able to Google on your cell phone.

Except in one area: I’ve occasionally wondered why there aren’t any great new science fiction writers anymore. I’m talking about folks

who can paint thought-provoking visions of how technology and society evolve — and still tell a darn good story. My personal pantheon includes writers like Robert Heinlein, Ursula LeGuin and Philip Dick.

More recently, there are guys like Neal Stephenson, who popularized the notion of online avatars and advanced our understanding of network-connected life. (Side note: I still think his 1988 novel “Zodiac” is highly underrated, and once convinced his publisher to re-issue it in paperback. Seems the rest of the world didn’t agree with me.)

Still, the apparent scarcity of writers who could tell meaningful stories, particularly about how networks will evolve, had been bugging me. I finally came close to admitting that maybe when it comes to science fiction writers, they don’t make ‘em like they used to.

Boy, was I wrong. Turns out I just hadn’t been paying attention to one of the new, brightest luminaries in the field: Charles Stross. You have to love a guy who envisions IT as “applied demonology” (one of the benefits of IPv6 is apparently its superior ability to contain the risk of demonic possession — who knew?) And you really don’t want to know what happens to Fred in accounting, who keeps calling the help desk with annoying requests for spreadsheet fixes.

But it’s Stross’ vision of how networking — the human kind and machine kind — evolve that’s really thought-provoking. If you’ve read his work, you know what I mean — and if you haven’t, you really should check it out. His ideas on privacy and identity authentication alone are worth the price of admission. He illustrates his ideas with real humans that you truly care about — even as he’s pushing the outer boundaries of what it means to be “human.”

If I still haven’t convinced you, have a look here. It’s a recent essay by Stross about some future trends, and I won’t spoil it by describing it, though I have to brag that one of the trends he mentions — lifelogging — was something my colleague and fellow *Network World* columnist Andreas Antonopoulos first proposed to me about six years back. (It almost made my head explode).

Anyway, I’m happy to report that it’s true that they don’t make science fiction writers like they used to — they’re even better these days.

*Johnson is president and senior founding partner at Nemertes Research, an independent technology research firm. She can be reached at [johna@nemertes.com](mailto:johna@nemertes.com).*

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# How DNS cache poisoning works

BY BOB HALLEY

**T**here is a long history of attacks on the Domain Name System ranging from brute-force denial-of-service attacks to targeted attacks requiring specialized software. In July 2008 a new DNS cache-poisoning attack was unveiled that is considered especially dangerous because it does not require substantial bandwidth or processor resources nor does it require sophisticated techniques.

With cache poisoning, an attacker attempts to insert a fake address record for an Internet domain into the DNS. If the server accepts the fake record, the cache is poisoned and subsequent requests for the address of the domain are answered with the address of a server controlled by the attacker. For as long as the fake entry is cached by the server (entries usually have a time to live — or TTL — of a couple of hours) subscribers' browsers or e-mail servers will go automatically to the address provided by the compromised DNS server.

(See a slideshow of how DNS cache poisoning works at [www.nwdocfinder.com/7151](http://www.nwdocfinder.com/7151).)

This kind of attack often is categorized as a "pharming" attack, and it creates several problems. First, users think they are at a familiar site — but they aren't. Unlike in a "phishing" attack where an alert user can spot a suspicious URL, the URL in this case is legitimate. Remember, the browser resolves the address of the domain automatically so there is no intervention of any kind on the part of the users; and because nothing unusual has happened, they have no reason to be suspicious.

Another problem is that hundreds or even thousands of users can be redirected if an attacker successfully inserts a single fake entry into a caching server. The scale of the problem is amplified by the popularity of the domain being requested. Under these circumstances, even a moderately experienced hacker can cause a lot of trouble, obtaining passwords and other valuable or sensitive information.

The way to attack e-mail systems is similar. Rather than inserting a fake Web-server record into a DNS caching server, attackers

insert a fake mail-server record, thereby redirecting corporate e-mail to a server they control.

So, what does an attacker need to do to persuade a caching server to accept a fake entry? When a DNS caching server gets a query from a subscriber for a domain, it looks to see if it has an entry cached. If it does not, it asks authoritative DNS servers (run by domain registries or domain owners themselves) and waits for their responses.

Before this latest vulnerability, attackers could only exploit this narrow opening: Their fake query response had to beat a legitimate authoritative DNS server and the response had to arrive at the caching server with the correct query-parameter values. These races typically only lasted a fraction of a second, making it difficult for an attacker to succeed.

With this new vulnerability, however, the dynamics of the race have been altered dramatically in favor of the attacker, because a security researcher figured out a way to eliminate the narrow time window: by rapidly firing questions at the caching server that the attacker knows the server will not be able to answer. For instance, an attacker can ask where [1q2w3e.google.com](http://1q2w3e.google.com) is, knowing a caching server is unlikely to have such an entry. That provokes subsequent questions from the caching server and creates millions of opportunities to send fake answers.

Instead of only one race, the attacker can have millions, creating more chances to guess the right values for query parameters and making the attack dangerous. In fact, it was demonstrated that open source DNS servers could be compromised in 10 seconds.

Poisoning an entry for [1q2w3e.google.com](http://1q2w3e.google.com) is not useful because no one will ever request that domain, but this is where the last part of the attack comes into play: In the fake answers, the attacker also points the caching server to a fake name-server for the domain the attacker wants to compromise. The caching server stores both of these pieces of information.

Because the attacker now controls the

name server for the domain, every subsequent query for the domain will be directed to the attacker's server. This means the attacker now controls addressing for all the subdomains for the domain: [www.bigbank.com](http://www.bigbank.com), [mail.bigbank.com](http://mail.bigbank.com) and so forth. This is extraordinarily powerful; any request for any subdomain can be directed to a server of the attacker's choosing.

To address these problems it was decided that the User Datagram Protocol port used for a query should no longer be the default Port 53 but a port randomly chosen from the entire range of UDP ports (minus the reserved ones). UDP source-port randomization (SPR) makes it harder for an attacker to guess query parameters because now both the 16-bit query ID and as many as 16 additional bits for the UDP port must be correct, for a total of as many as 4 billion combinations.

Enterprises, however, discovered their DNS servers were situated behind various devices that provide network address translation. Most NATs de-randomized the UDP ports used by the DNS server, rendering the new fix less effective. In addition, IT managers were not enthusiastic about opening up the full range of UDP ports in their firewalls. To make matters worse, another security researcher demonstrated that it was still possible to poison a DNS server even with the protection afforded by randomization across 64,000 UDP ports.

## Now what?

It's time to consider alternative means of securing the DNS. UDP SPR is a useful defense, but a balance needs to be struck between the protection it affords the DNS and the exposure created by opening a range of ports or degrading firewall performance. Secure modes of operation for DNS servers, such as switching to a TCP connection when potential attacks are detected, are another useful defense.

Additional defenses are needed when an attacker gets lucky and guesses the necessary parameters to spoof a query response. This means DNS servers need to get smarter and analyze query responses so potentially harmful information can be discarded from fake answers sent by an attacker.

*Halley is a principal architect at Nominum ([www.nominum.com](http://www.nominum.com)).*

## Got great ideas?

■ *Network World* is looking for great ideas for future Tech Updates. If you've got one, and want to contribute it to a future issue, contact Editor in Chief John Dix ([jdix@nww.com](mailto:jdix@nww.com))

This vendor-written tech primer has been edited by *Network World* to eliminate product promotion, but readers should note it will likely favor the submitter's approach.





## GEARHEAD

Mark Gibbs

# Improving cell phone reception

**I**t was with some amusement I recently stumbled across T-Mobile's Personal Coverage Check, a service that claims you can "Check if T-Mobile coverage is right for you."

A quick digression: Ever wonder what the "t" in T-Mobile stands for? The answer is "Telekom" because the company is a subsidiary of Deutsche Telekom. I have always found German products to be of high quality with good customer service, but for some reason T-Mobile is different.

According to T-Mobile's mapping service I should have a signal strength of three to four bars. Judging from my very precise measurements (that is, looking at my phone), reality is a little different, with my signal usually between zero and four bars and alternating between those states on a roughly 5-minute cycle. So far I have not been able to find an explanation as to why the signal strength should wobble around so much.

Actually when I write "between zero and four bars" I should qualify that with the phrase "until two weeks ago." These days the cycle has shifted so now about every 5 minutes I get four bars for about 30 seconds and then nothing, nyet, nada, for the rest of the time. Can customer service tell me why? No. Can they do anything about it? Hah!

With my signal strength wavering there was an opportunity to see if a product I had just received could improve my service. The product is the Arc Wireless Freedom Blade, an external antenna for cell phones, PDAs or any other wireless devices that operate in the cell phone bands.

If you want to find out what bands the cell phone carriers use in your neck of the woods check out Wireless Advisor ([www.wirelessadvisor.com](http://www.wirelessadvisor.com)).

Here's the problem with signal-boosting antennas: To work their magic and really boost signal strength they need to be tuned for a particular

frequency. Either side of that frequency the gain (that is amplification) decreases significantly. As cell phones operate in channels within fairly wide frequency bands it would seem an antenna would only make an improvement for a particular channel.

Thus it was without much hope of improving my cell phone reception that I unpacked the Blade to discover a 5-inch-by-1.5-inch-by-0.25-inch piece of black plastic weighing a few ounces with a yard-long thin coax tail. The Blade also comes with an adapter cable that connects the mini-BNC coax to a connector compatible with your phone's antenna adapter.

I plugged in the Blade and my phone, which showed no signal, reported four bars! Whether the results include, as the company claims, "enhanced voice clarity" is hard to determine, as is quantifying the improvement in the signal reception, but the Blade appears to work.

You may be wondering why this gadget seems to work so well when it theoretically shouldn't? A company representative says the antenna contains circuitry that uses "flared slots and broadband matching" to selectively amplify the cellular signals. I have a rough idea what this means but perhaps one of you could enlighten me?

What I don't like about the Freedom Blade is that its cable with the adapter connector is large and comparatively heavy considering how little the antenna weighs, and the included stand is kind of pathetic. Arc should also include the optional laptop and vent clips rather than making them a separate purchase.

So, until T-Mobile fixes my local cell tower or whatever the problem is, the Freedom Blade appears to be keeping me connected. Unfortunately the screen on my cell phone just died and so I have no idea who is calling, but at least they can. The Freedom Blade gets a score of 3 out of 5.

*Gibbs awaits your communications in Ventura, Calif. Signal him at [gearhead@gibbs.com](mailto:gearhead@gibbs.com).*



Keith Shaw

## COOLTOOLS

# Two ways to track via GPS

**The scoop:** Spot Satellite Messenger, by Globalstar, about \$170 (plus \$100 per year basic service, with optional \$50 per year service for unlimited tracking).

**What it is:** The handheld Spot device is a personal GPS tracker that can provide friends and family members with alerts and updates on the owner's location.

The Spot sends messages (via e-mail or text message to mobile phones) providing the GPS coordinates for the device. Because it uses the satellite network, this can provide location details where cell phone coverage is nonexistent, or in cases where a user's cell phone doesn't work. The Spot has three modes of communication — an "OK" button sends a message to contacts that the person is OK, along with a GPS location. A "Help" button is a nonemergency request for help — useful for situations like when your car breaks down or you've locked your keys in the car. The "911" button is used to contact emergency response officials (like if you are lost hiking). The OK button can also be used to help track the journey of the user — when in Tracking mode, the device updates the GPS location every 10 minutes for 24 hours, with the locations displayed on a personal Web site via a Google Maps interface.

**Why it's cool:** The 911 button is like having auto insurance or life insurance — you don't want to have to use it, but it's good to know that you have it if you need it. The added value comes from the additional buttons and modes — using the OK button is great for letting contacts know that you have reached a desti-

nation safely (great for traveling parents or kids), and the Help button is good for those times where you might need some help but you don't want to call out the cavalry.

**Some caveats:** Users need to keep fresh batteries in the device (fortunately, the device will provide a low-battery warning), and they should know how to properly activate the 911 button.

**Grade:** ★★★★★ (out of five).



**The Spot Satellite Messenger allows family and friends to track you.**

**The scoop:** Zoombak Universal A-GPS Locator, by Zoombak, about \$200 (plus service, about \$15 per month or \$145 per year, if prepaid).

**What it is:** This personal GPS locator can help users keep track of a vehicle, pets or even a person. The small device (about the size of a digital camera battery pack) is powered by a rechargeable battery (up to five days of life when powered). Locations can be tracked on-demand via a personal Web site portal, or continuously tracked (up to 60 minutes) on a map.

**Why it's cool:** In addition to the tracking features, you can set up "Safety Zones" that alert you when the device enters/leaves an area (great for keeping track of kids to make sure they made it to school). Alerts can also be sent if the battery is low or the device is powered off.

**Some caveats:** Setup was a little tricky, and setting up alerts via the portal takes some time. Other than the safety zone features, there's no way to alert authorities like the Spot device.

**Grade:** ★★★★★

*Shaw can be reached at [kshaw@nww.com](mailto:kshaw@nww.com).*




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- 2) debug DNS issues
- 3) bring new servers or domain online
- 4) get real-time view of domain & email health
- 5) troubleshoot connectivity issues



Connect to mail servers	ERROR: I could not complete a connection to one or more of your mail servers: btmx4.domain.com: Timed out [Last data sent: RCPT TO: ] mx4.domain.com: Timed out [Last data sent: (Did not connect)] mx4.domain.com: Timed out [Last data sent: (Did not connect)]
Acceptance of postmaster address	OK: All of your mailservers accept mail from the postmaster address.
Acceptance of abuse address	OK: All of your mailservers accept mail from the abuse address.
Open relay test	OK: All of your mailservers appear to be secure and do not act as open relays.
SPF record	btmx3.domain.com OK: 551 denied btmx6a.domain.com Relay request denied   Your domain does not have an SPF record, which can make your domain look bad (if the recipient thinks you really sent it), and can cost you money (when spammers use your domain to send out E-mail that looks like it came from you, rather than the spammer). You may want to add an SPF record ASAP. As of Oct 2004 was the target domain to have SPF records in place (Yahoo!, for example, started checking SPF records on Oct 2004).
WWW Record	Your www.domain.com A record is: www.domain.com . A 72.5.124.61 [TTL=900] [US]
All WWW IPs public	OK. All of your WWW IPs appear to be public IPs. If there were any private IPs, they would not be reachable, causing problems reaching your web site.
CHAME Lookup	OK. Some domains have a CHAME record for their WWW server that requires an extra DNS lookup, which slightly delays the initial access to the website and use extra bandwidth. There are no CHAMES for www.domain.com, which is good.
Domain A Lookup	Your domain.com A record is: domain.com . A 72.5.124.61 [TTL=900]

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# THE NEW DATA CENTER

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**What you like best about next-generation IT.** At right.

**10 products for taking IT to the next level.** Page 32

**Seven tips for succeeding with virtualization.**

Experts share best practices for optimizing strategic virtualization initiatives. Page 42



## NEW DATA CENTER ONLINE EXCLUSIVES

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**10 products for taking IT to the next level.** At a glance, here are best-of-their-kind products for increasingly sophisticated IT environments. [www.nwdocfinder.com/7128](http://www.nwdocfinder.com/7128)

# What

Flexibility, cost savings and eco-friendly operations make the list

BY ANN HERSHEY

COVER DESIGN: STEPHEN SAUER, PHOTO: BRUCE HERSHEY



# you like best about next-generation IT

HUNDREDS OF GALLONS OF USED VEGETABLE OIL BELONG ANYWHERE NEAR A DATA CENTER, LET ALONE INSIDE? PHIL NAIL THINKS SO.

Nail is CTO of AISO.Net, whose Romoland, Calif., data center gets 100% of its electricity from solar energy. Now he's considering waste vegetable oil as an alternative to using diesel fuel in the Web hosting company's setup for storing solar-generated power.

"We're never opposed to trying something new," says Nail, who last year eliminated nearly 100 underutilized stand-alone servers in favor of four IBM System x3650 servers, partitioned into dozens of virtual machines using VMware software.

Server virtualization fits right into AISO.Net's environmentally friendly credo. The company increased its average server-utilization level by 50% while achieving a 60% reduction in power and cooling costs through its consolidation project.

For Nail, virtualization technology lives up to the hype. Nevertheless, it isn't always easy for IT executives to find the right technology to help a business stay nimble, cut costs or streamline operations. Read

on to learn how Nail and three other IT professionals made big changes in their data centers, and what they like best about their new deployments.

## No more vendor lock-in

Vendor lock-in is a common plight for IT storage buyers. Lifestyle Family Fitness, however, found a way out of the shackles. The 56-club fitness chain in St. Petersburg, Fla., set out to resolve a performance bottleneck it traced back to its storage network, and wound up upgrading its data center infrastructure in a way that not only took care of the problem but also extended the life of its older storage arrays.

Lifestyle's users were starting to notice that certain core applications, such as membership and employee records, were sluggish. IT staff confirmed the problem by looking at such metrics as the average disk-queue length (which counts how many I/O operations are waiting for the hard disk to become available), recalls Michael Geis, director of IS operations for the chain. "Anything over

## "LET SOMEBODY ELSE HAVE THE POWER."

— PHIL NAIL, CTO, AISO.Net, pictured with the solar panels the company uses for electricity, speaking of his decision to sell servers left over from a virtualization-related consolidation on eBay





2 is considered a bottleneck, meaning your disks are too slow. We were seeing them into the 60, 80 and 100 range during peak times," he says.

After IBM's SAN Volume Controller (SVC) was rolled out last November, queue lengths settled back below two, Geis says. The two-node clustered SVC software fronts EMC Clarion CX300 and IBM System Storage DS4700 disk arrays, along with two IBM Brocade SAN switches. SVC lets Lifestyle combine storage capacity from both vendors' disk systems into a single pool that is manageable as a whole for greater utilization. An onboard cache helps speed I/O performance; SVC acknowledges transactions once they've been committed to its cache but before they're sent to the underlying storage controllers.

A key benefit of virtualizing storage is the ability to retain older gear, rather than doing the forklift replacements typically required of storage upgrades, Geis says. "We didn't have to throw away our old legacy equipment. Even though we'd had it for a few years, it still had a lot of performance value to us," he says. Lifestyle uses the new IBM storage for its most performance-sensitive applications, such as its core databases and mail server, and uses the EMC gear for second- and third-tier storage.

Using storage gear from more than one vendor adds management overhead, however. "You have to have a relationship with two manufacturers and have two maintenance contracts. There's also expertise to think about. Our storage team internally has to become masters of multiple platforms," Geis says.

The payoff is worth it, however. "Now that I've got storage virtualization in place with the SVC, my next storage purchase doesn't have to be IBM. I could go back and buy EMC again, if I wanted to, because I have this device in-between," Geis says.

Heterogeneous storage virtualization gives buyers a lot more purchasing flexibility — and negotiating power. "Every time we add new storage, IBM has to work in a competitive situation," Geis says. "Five years ago, the day you made the decision to go with EMC or IBM or HP or anyone, you might get a great discount on the first purchase, but you were locked into that platform for three to five years," he says.

What Geis likes best is the flexibility the system affords and "knowing that I don't have to follow in the footsteps of everybody else's storage practices, that I can pick and choose the path that we feel is best for our organization."

### Getting more out of existing resources

A key addition to Pronto.com's Web infrastructure made all the difference in its e-commerce operations. Fifteen million people tap the Pronto.com comparison-shopping site each month to find the best deals on 70 million products for sale on the Web. If the site isn't performing, revenue suffers.

Pronto.com wanted to upgrade its load balancers in conjunction with a move from a hosting provider's facility in Colorado to a Virginia data center operated by parent company IAC (which also owns Ask.com, Match.com and Evite, among other Internet businesses). The

New York-based start-up invested in more than load balancing, however, when a cold call from Crescendo Networks led to a trial of the vendor's application-delivery controllers.

Load balancing is just one aspect of today's application-delivery controllers, which combine such capabilities as TCP connection management, SSL termination, data compression, caching and network address translation. The devices manage server requests and offload process-intensive tasks from content servers to optimize Web application performance. "Our team knew load balancing really well, but we didn't know optimization. And we didn't know that optimization would be something that we'd really want," recalls Tony Casson, director of operations at Pronto.com.

When Casson and his team tried out Crescendo's AppBeat DC appliances, however, they were convinced. In particular, the devices' ability to offload TCP/IP and SSL transactions from Web servers won them over.

A major benefit is that Pronto.com can delay new Web-server purchases even as its business grows. "It really has extended the life of our server platform," Casson says. "The need for us to purchase new front-line equipment has been cut in half. Each individual Web server can handle approximately 1.5 times the volume it could before."

### Small investment, big payoff

IT projects don't have to be grand to be game-changing. A low-priced desktop add-on is yielding huge dividends for the Miami-Dade County Public Schools.

The school district installed power-management software on 104,000 PCs at 370 locations. By automatically shutting down desktops that aren't in use, the software has reduced the district's average PC-on time from 20.75 hours per day to 10.3 hours. In turn, it's shaved more than \$2 million from the district's \$80 million annual power bill.

Best of all, because Miami-Dade already was using software from IT management vendor BigFix for asset and patch management, adding the vendor's power-management component cost the district just \$2 more per desktop. "There was very little effort to implement the program once we defined the operating parameters," says Tom Sims, Miami-Dade's director of network services.

Besides saving money, the power-management project has kick-started a new wave of green IT efforts — something that's as important to the school district's managers as it is to users. "We all want to save energy and keep the environment clean and functional for our kids, more so because we are a public school system," Sims says.

Today Miami-Dade is working on the program's second phase, the goal of which is to let IT administrators customize shut-down times on a school-by-school basis. That will result in more power saved and more reductions in carbon emissions.

Looking ahead, the district is eyeing the chance for even bigger savings by turning off air conditioning units in areas where desktop

computers are powered off. IP-controlled thermostats will enable Miami-Dade to coordinate PC and air conditioning downtime. "The potential cost savings is even bigger than the desktop-power cost savings," Sims says.

For that to happen, the IT group has been working more closely with facilities management teams — a collaboration Sims expects to grow. "There are IP-driven devices that will interface with all kinds of facilities equipment. These devices allow remote management and control by a central office via the organization's data network. So, the possibilities seem limitless."

### Staying green

Going green is more than a buzzword for AISO.Net, which from its inception in 1997 has espoused eco-friendly operations.

Other companies are buying carbon offsets to ease their environmental conscience, but energy credits aren't part of the equation for AISO.Net. The company gets its data center electricity from 120 roof-mounted solar panels. Solar tubes bring in natural sunlight, eliminating the need for conventional lighting during the day; and air conditioning systems are water-cooled to conserve energy.

As it did with its building infrastructure, AISO.Net overhauled its IT infrastructure with green savings in mind. By consolidating dozens of commodity servers to four IBM servers running VMware's Infrastructure 3 software, it upped utilization while lowering electricity and cooling loads. CTO Nail sold the leftover servers on eBay. "Let somebody else have the power," he says.

For Nail, green business is good business, and that's what he likes best about it. "Maybe it costs a little bit more, but it definitely pays for itself, and it's doing the right thing for the environment," he says. Customers like environmentally friendly technology too: "More and more companies are looking at their vendors to see what kind of environmental policies they have," he says.

Today AISO.Net is designing a rooftop garden for its data center; it estimates the green roof could reduce cooling and heating requirements by more than 50%. It's also looking for an alternative way to store solar-generated power. That's where the waste vegetable oil comes in. Nail wants to replace the company's battery bank, which stores power from the solar panels, with a more environmentally friendly alternative. The idea is to retrofit a small generator to run not on diesel fuel but on recycled vegetable oil acquired from local restaurants and heated in 55-gallon drums. The generator in turn would feed power to air conditioning units, Nail says.

The idea came from seeing others use waste vegetable oil to run cars, Nail says. "We figured, why can't we take that technology and put it into something that would run our air conditioning?" he notes. "We're kicking that around, trying to design it and figure out how we're going to implement it." ■



# BLACK IS THE NEW GREEN.

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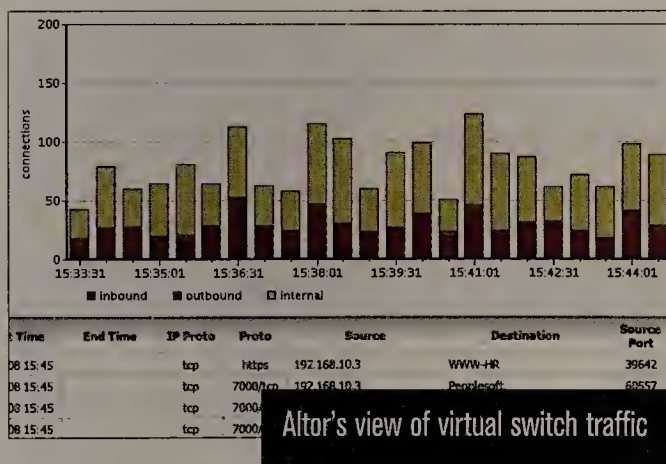
# 10 PRODUCTS

## for taking your network to the next level

BY SANDRA GITTLEN



Need a deeper look into your virtual environment so you can charge departments for resource use? Want to keep closer track of communications among virtual machines? Ready for a product that extends the life of the batteries operating your critical wireless networks? Here are 10 best-of-their-kind products for increasingly sophisticated IT environments.



Altor's view of virtual switch traffic

### 1. ALTOR NETWORKS' VIRTUAL NETWORK SECURITY ANALYZER

**AVAILABILITY:** Now

**PRICING:** Starts at \$500 per physical server; supports an unlimited number of virtual machines. A required Altor Center management system supporting unlimited VNSA agents costs \$1,500.

**WHAT IT DOES:** The VNSA appliance lets IT departments oversee virtual switches to make sure that communications among virtual machines are compliant and secure. It relies on agents for monitoring traffic and a centralized management tool for detecting, analyzing and alleviating problems across the virtual enterprise. For instance, VNSA can alert IT groups to top talkers, configuration errors, inappropriate protocols, network anomalies and compliance issues.

**WHY IT'S IMPORTANT:** "Not only can the technology look at [virtual] traffic, it can act on it. It can drop packets, manipulate traffic and quarantine machines," says Phil Hochmuth, senior analyst at Yankee Group. (See "Four virtualization security companies to watch," [www.nwdocfinder.com/7121](http://www.nwdocfinder.com/7121).)

**IN THE FIELD:** Nielsen Mobile, a division of The Nielsen Company, uses VNSA for real-time and historical monitoring and analysis of its virtual switch traffic.

Media giant Hearst uses the VNSA appliance to look at virtual machines at rest and in motion among physical machines. The company's production environment is made up of hundreds of virtual machines.

Alloy products supplier Winsert uses VNSA to carry out network management and security best practices in its virtual environment. The company also relies on VNSA to monitor and troubleshoot performance problems among virtualized applications and servers.

### 2. CIRBA'S CIRBA 5.0 DATA-INTELLIGENCE SOFTWARE

**AVAILABILITY:** Now

**PRICING:** Cirba's subscription pricing is based on both the number of targets — physical or virtual operating-system instances — under analysis and the length of its contract with a customer in years. For example, under a 500-server, three-year commitment, the cost per year is approximately \$150 per server.

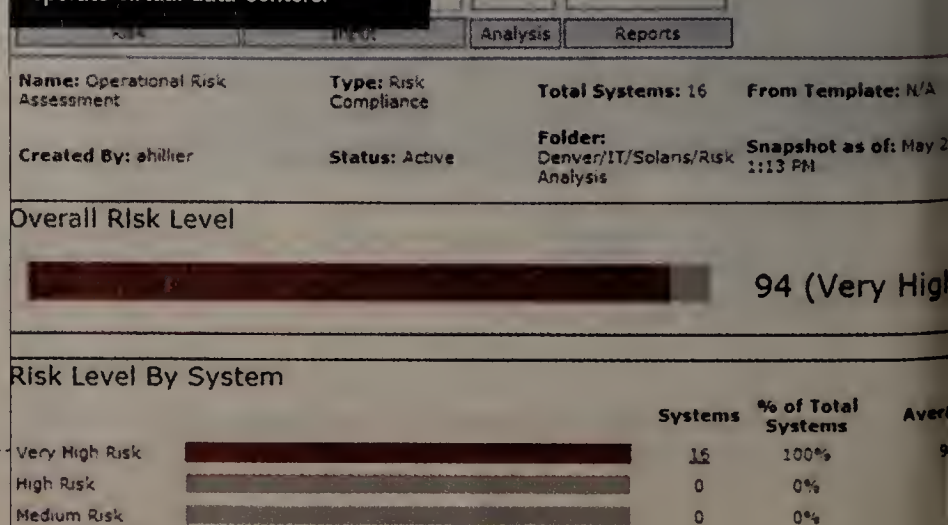
**WHAT IT DOES:** Cirba 5.0 analysis dashboards help companies predict, plan, deploy and operate efficient virtual data centers. For instance, an IT group can assess options for server consolidation, optimize the placement of physical and virtual resources, and manage capacity changes in real time. Cirba 5.0 helps track and reduce power consumption and other costs associated with virtual server environments.

**WHY IT'S IMPORTANT:** "This tool addresses a critical area of the virtual environment. Too many organizations jump into virtualization deployments without really investigating resource capacity or compatibility. They end up overusing servers and degrading performance; underusing servers and failing to realize true cost savings; or co-locating incompatible workloads on a single virtual server, causing compliance, risk, exposure, performance and other critical problems," says Andi Mann, research director, Enterprise Management Associates (EMA).

**IN THE FIELD:** Reliance Limited Partnership, an energy and security company, uses the capacity-planning tool to determine the virtual-machine resources that new applications will require and to create an audit trail for change management. (See "10 must-have virtualization tools," [www.nwdocfinder.com/7122](http://www.nwdocfinder.com/7122).)

See Products, page 34

Cirba analysis dashboards help IT managers predict, plan, deploy and operate virtual data centers.





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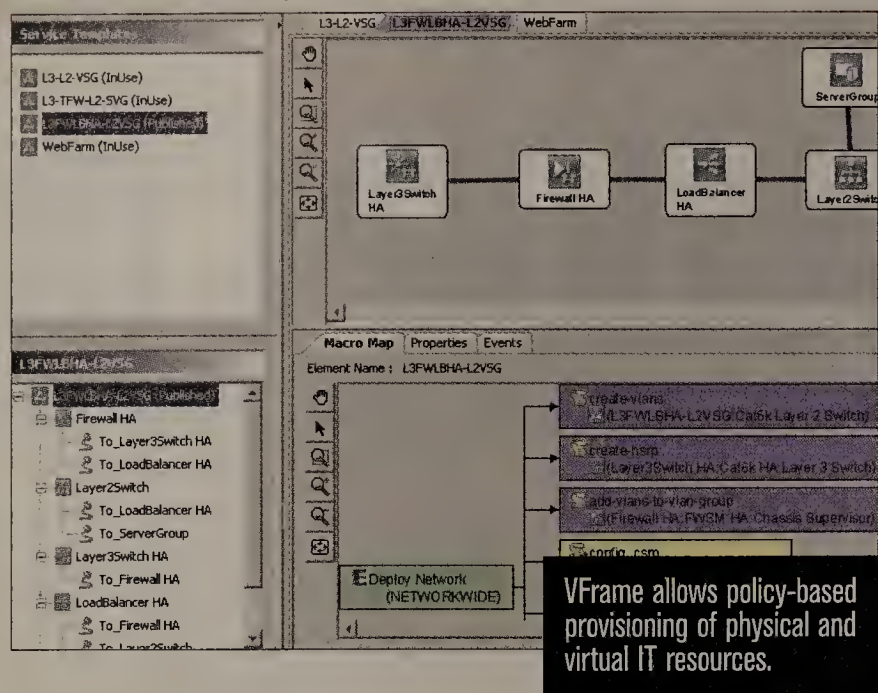
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### 3. CISCO'S VFRAME DATA CENTER

**AVAILABILITY:** Now

**PRICING:** Starts at \$59,000 for a fully functional starter kit that can scale to support several hundred data-center devices.

**WHAT IT DOES:** With the VFrame appliance, companies can carry out policy-based provisioning of shared physical and virtual computing, storage and network resources. These policies can be based on a wide range of instances, such as server failures or the need for load-balancing x86 servers across multiple VMware ESX server clusters. With VFrame, application deployments are faster and more efficient because configurations are automated and standardized.

**WHY IT'S IMPORTANT:** "Process automation and orchestration, which is what VFrame does, embeds standards and skills into software and allows virtualization deployments to execute unattended at computer speeds. This technology drives high availability, dynamic flexibility, agile response to business needs, strong cost reductions and more," EMA's Mann says.

**IN THE FIELD:** Cisco would not release specific customer names. However, it says that a Southern California high-tech company uses VFrame to build its application grid environment, which has standardized hardware that has to adapt to various workloads; and that a city government deployed VFrame to automate the addition of networking and storage provisioning to its physical infrastructure.

### 4. EMBOTICS' V-COMMANDER 2.0






**AVAILABILITY:** Now

**PRICING:** \$10,000

**WHAT IT DOES:** V-Commander manages servers' life cycles to help IT organizations tamp down on dangerous virtual-server sprawl. Users can track their machines in real time, keeping tabs on patches, configurations, access and retired servers. They also can create and enforce policies to control and automate virtual-machine deployments. V-Commander includes detailed reporting to support regulatory and organizational compliance.

**WHY IT'S IMPORTANT:** "Embotics is coming at the problem of managing virtual machines from a broad, long-range view, incorporating inventory, usage, managing

Clicking through any element in this Web-based dashboard will provide full details and link to V-Commander's relevant section.

			-7 days	0 days	30 days	
0	6	Not Running	1	0	1	0
8	13	Running	3	0	0	0
						
Never Expires	No Expiry Date Set		Not Expired	Soon to Expire	Expired	Post Exp

resources, applications and the policies that apply along the duration of the virtual machine's life cycle," says Rich Ptak, principal analyst at Ptak, Noel and Associates. (See "7 virtualization management companies to watch," [www.nwdocfinder.com/7123](http://www.nwdocfinder.com/7123).)

**IN THE FIELD:** Alcatel-Lucent uses V-Commander to combat the virtual-machine challenges that occur as the company consolidates and centralizes its data centers, increasing the overall volume of virtualization.

Advanced Micro Devices deployed V-Commander to maintain control while it adapted server virtualization from a consolidation project to a data-center architecture.

Zentra Computer Technologies takes advantage of V-Commander's policy-based management and control, automation and operational oversight to avoid the inherent risks of virtual servers.

### 5. EMC'S ENTERPRISE FLASH DRIVES

**AVAILABILITY:** Enterprise flash drives are available now in the Symmetrix DMX-4; they will be available for the Clariion CX4 storage systems this month.

**PRICING:** The EMC Symmetrix DMX-4 with flash drives starts at \$250,000; the Clariion CX4 with flash drives starts at \$31,185.

**WHAT THEY DO:** Solid-data, flash-based drives should speed the performance and reduce the power consumption of EMC storage systems; the company reports that the flash drives deliver single-millisecond application-response times — 10 times faster than the response time of traditional Fibre Channel drives. EMC combines single-layer, cell flash technology and controllers for ultrafast read-and-write performance, high reliability, and dependable data integrity. Users should be able to provision, manage, replicate and move data among the flash drives and Fibre Channel and Serial Advanced Technology Attachment disk drives.

**WHY THEY'RE IMPORTANT:** "Although there is a range of possible solid-state storage options, there is little doubt that flash technology will become a significant contributor to the next-generation enterprise. Some of the positive attributes are well known: Mainly, compared with standard spinning disks, the technologies provide extremely high I/O rates with low latency and low consumption of power and space. Cost is viewed as an impediment to adoption, but that could soon change as we start to measure storage devices in terms of I/O and kilowatts," says Mark Peters, analyst at Enterprise Strategy Group.

**IN THE FIELD:** EMC has not disclosed users of its enterprise flash drives.

The DMX-4 is the first storage system for which EMC offers enterprise flash drives.

### 6. GAINSPAN'S GS1010 CHIP AND SOFTWARE

**AVAILABILITY:** Now

**PRICING:** Not applicable.

**WHAT THEY DO:** GainSpan's GS1010 dual-core, ARM-architecture system-on-a-chip and management software work together, via an 802.11b/g implementation, to extend the life of batteries in wireless-network sensors and other devices. Sensors, such as those used in building automation, transportation and supply chain management, can tap into a company's Wi-Fi infrastructure and run as long as 10 years on a single AA battery, the company says.

See Products, page 36



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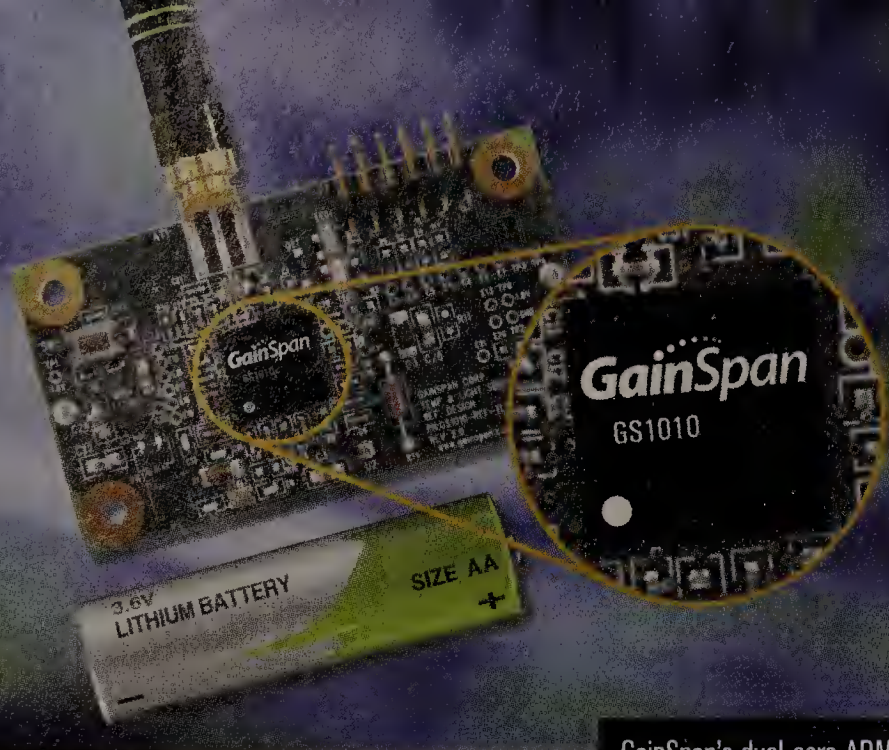
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Products continued from page 34

**WHY THEY'RE IMPORTANT:** The chip and software introduce the combination of IP and the 802.11 wireless LAN standard as a viable and proven network technology for wireless-sensor networks that can be integrated easily with the enterprise without gateways or separate networks and protocol stacks. (See "Nine wireless companies to watch," [www.nwdocfinder.com/7124](http://www.nwdocfinder.com/7124).)

**IN THE FIELD:** GainSpan would not release specific customer names, but says its technology is used in Wi-Fi-based thermostats and IP-based monitoring and management systems for energy monitoring and management in commercial buildings, as well as in demand-response units with a Wi-Fi thermostat and electric meters with Internet connectivity through home broadband connections. In addition, supply-chain management and logistics companies are using the technology for asset- and people-tracking using Wi-Fi location and sensor tags.

GainSpan's dual-core ARM system on a chip helps advance the usefulness of wireless sensor networks in the enterprise.

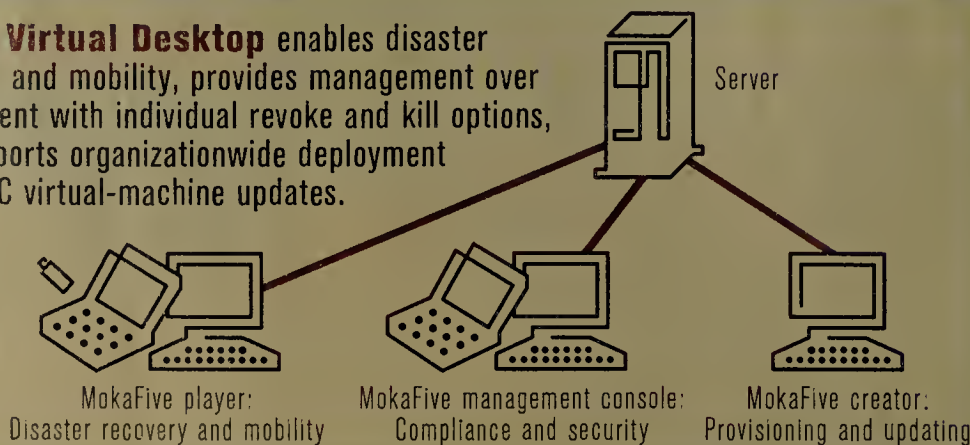
## 7. MOKA5'S MOKAFIVE VIRTUAL DESKTOP

**AVAILABILITY:** Now

**PRICING:** Annual license fees are \$79 to \$99 per user depending on volume, and include the cost of support and hosting.

**WHAT IT DOES:** MokaFive Virtual Desktop, a software-as-a-service offering, lets IT managers create, deploy, monitor, patch, secure and update the vendor's LivePC virtual-desktop environments. The centralized administration console also lets IT teams run multiple virtual desktops on a single machine to guarantee a secure separation between work and personal applications. MokaFive locally caches LivePC images so users can work offline. If a virtual desktop experiences a security problem because of malware, spyware or other threats, it can be rebooted to a previous, uninfected state.

Moka5's **Virtual Desktop** enables disaster recovery and mobility, provides management over deployment with individual revoke and kill options, and supports organizationwide deployment of LivePC virtual-machine updates.



**WHY IT'S IMPORTANT:** "Desktop virtualization is the fastest growing of all virtualization technologies. The drivers are greater workforce mobility, faster repair times, less downtime, reduced security risk, improved compliance, and lower costs for business units and IT departments. To achieve this success, enterprises need to focus on making sure they accommodate user differences; ensure compatibility between desktop virtualization and the workloads they have to handle; plan around network issues, such as low bandwidth or connection dropouts that would cause slowdowns or downtime for virtual desktops; and create and test high availability for critical servers delivering remote, server-based virtual desktops," EMA's Mann says.

**IN THE FIELD:** IT administrators at Panasonic Emerging Advanced RF Laboratory use MokaFive Virtual Desktop to carry out business-continuity and disaster-recovery plans while remaining compliant. In a disaster, they could access virtual desktop images safely via an encrypted USB and VPN on any PC.

With the MokaFive Virtual Desktop, law firm Fenwick & West creates sandbox environments for evaluating new technologies from its patent and trademark group's clients. Attorneys can install and test the clients' products without jeopardizing the stability of their corporate work environment.

## 8. PALO ALTO NETWORKS' PA-4000 AND PA-2000 SERIES NEXT-GENERATION FIREWALLS

**AVAILABILITY:** Now

**PRICING:** The PA-4050, which supports up to 10Gbps throughput, costs \$60,000. The PA-4020, which supports up to 2Gbps throughput, costs \$35,000. The PA-2050, which supports up to 1Gbps throughput, costs \$16,000. The PA-2020, which supports up to 500Mbps throughput, costs \$12,000.

**WHAT THEY DO:** These firewalls comprise a trio of technologies that monitor applications, users and content to detect network threats: App-ID classifies application traffic regardless of its port, protocol or SSL encryption; User-ID taps into Microsoft's Active Directory to map policies to user activity; and the Content-ID inspection engine blocks file transfers and controls Web surfing to thwart content-based threats. The focus on such "business-relevant" application, user and content information improves overall security, Palo Alto says.

**WHY THEY'RE IMPORTANT:** The Palo Alto firewalls change the way enterprises do outbound firewalling. "For a long time, [companies] either had an 'unlimited outbound policy' — which was a bad idea but

the only option due to lack of tools — or blocked most outbound and required all Web-based traffic to go through a proxy, such as Blue Coat Systems or IronPort Systems [now part of Cisco]. With Palo Alto's products, security managers can actually control in fine detail what the users are allowed to do on the Internet. The deep knowledge of application, rather than simple dependence on ports, helps to both define what is and isn't allowed and to catch various tricks people use to sneak through enterprise firewalls and get around policy," says Joel Snyder, senior partner at Opus One and Network World product tester.

**IN THE FIELD:** Koch Logistics, a global transportation, shipping and distribution logistics provider, uses the firewalls to set and

See Products, page 38



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Products continued from page 36

enforce policies and scan for threats at the application level.

Mercy Medical Center, a healthcare facility and teaching hospital for the University of Maryland, implemented the firewalls' policy-enforcement features to secure network access for staff, contractors and more than 50,000 patients. Mercy has the visibility and control needed to keep the network open while protecting patient privacy.

Western & Southern Financial Group, a financial services firm with more than \$48 billion in assets, uses the firewall to identify malicious software on desktops, shut down evasive applications and threats, and pinpoint the locations of application sources and destinations worldwide.

## 9. VKERNEL'S CAPACITY ANALYZER, CHARGEBACK AND MODELER APPLIANCES

**AVAILABILITY:** Capacity Analyzer and Chargeback are available now, as is a beta version of Modeler.

**PRICING:** All start at \$199 per CPU socket.

**WHAT THEY DO:** These virtual appliances work individually or together to gain visibility into virtual environments, which leads to greater overall operating efficiencies. Capacity Analyzer identifies and prevents inappropriate allocations of such shared resources as CPU, memory, storage and network. Chargeback gives IT teams a way to measure and recover the costs associated with departments' use of virtual machines. And Modeler enables IT staff to safely model and validate VMware ESX changes to avoid production-environment problems.

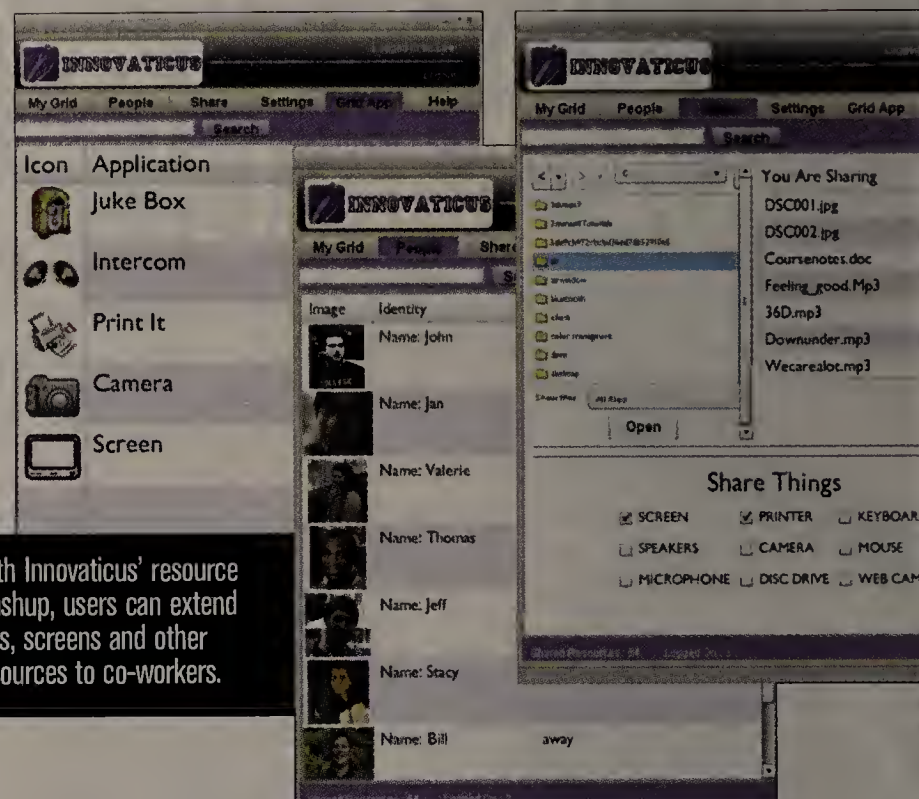
**WHY THEY'RE IMPORTANT:** "In virtualization deployments, business owners are starting to demand chargeback and other metrics as a way to ensure they are getting the resource allocations that they are paying for, and IT is using these metrics to prove to business owners that they are saving money on infrastructure without any performance degradations," EMA's Mann says.

**IN THE FIELD:** Berry College in Mount Berry, Ga., uses the Chargeback virtual appliance to control, monitor and charge back resources in real time for each virtualization project. The school relies on Chargeback's detailed reporting to provide users with information about resource consumption and costs.

Game and toy maker Hasbro uses VKernel's virtual appliances to get an insight into its VMware ESX environment's use of capacity. For instance, the company monitors its Top 5 resource-consumers to architect resource pools better. It also uses the tools to check the impact new virtual machines have on the overall environment.

Hovensa, a global refinery, uses VKernel Capacity Bottleneck Analyzer to monitor its VMware ESX environment and allocate shared resources among virtual machines.

VKernel's Modeler tool will enable modeling and VMware ESX change-validation for problem avoidance.



## 10. WIRELESS GRIDS' INNOVATICUS SOFTWARE

**AVAILABILITY:** Will be released in beta in November with virtual file-sharing.

**PRICING:** A beta evaluation license will cost \$75,000 plus a negotiable per-user license fee.

**WHAT IT DOES:** With Innovaticus software, users can break down the barriers between their wired and wireless network devices. Using automated negotiating technology, Innovaticus links files, speakers, printers, microphones, cameras and screens into a single mashup. Then users can extend those mixed resources to their friends, co-workers or other Innovaticus users.

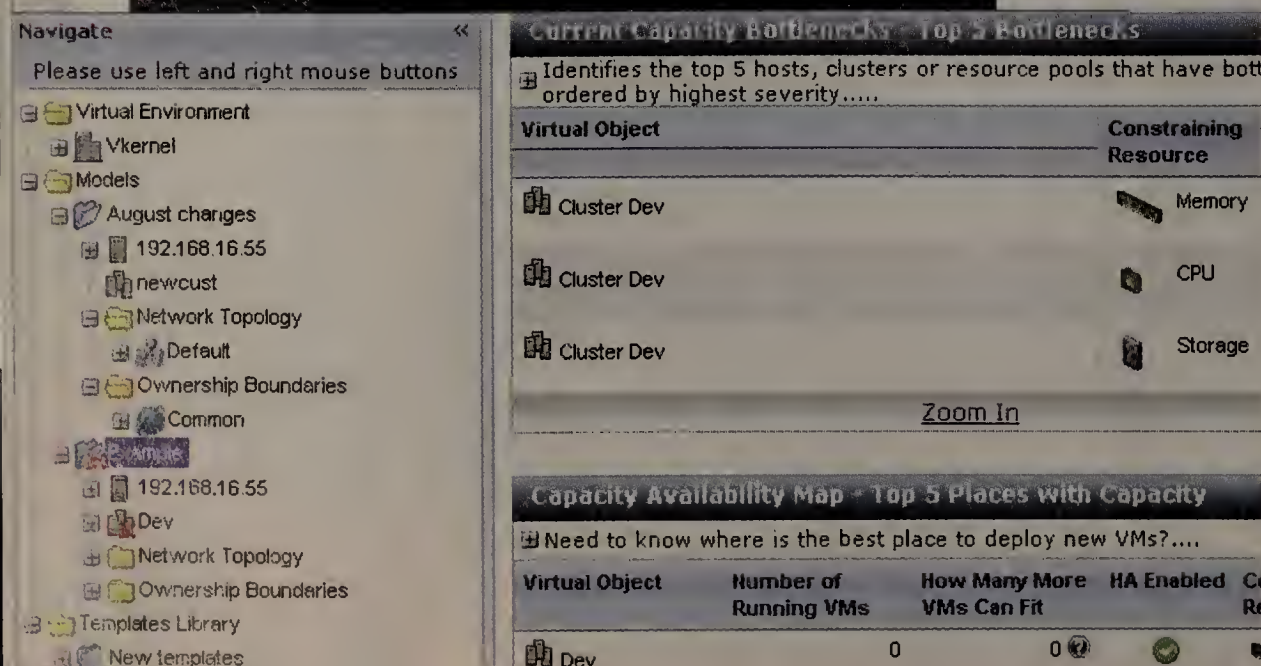
**WHY IT'S IMPORTANT:** Think of Innovaticus as a structure for mobile spontaneity: Your personal or business devices become part of an interoperable grid that amplifies what you can do but lets you do it with and through the resources others make available. (See "Nine wireless companies to watch," [www.nwdocfinder.com/7124](http://www.nwdocfinder.com/7124).)

**IN THE FIELD:** Carnegie Mellon University, Clear Channel Communications and Syracuse University use Innovaticus to let users create ad hoc device networks that other users can tap into to share photos, files, printers and other resources.

Gittlen, a freelance technology writer in the Greater Boston area, can be reached at [sgittlen@verizon.net](mailto:sgittlen@verizon.net).

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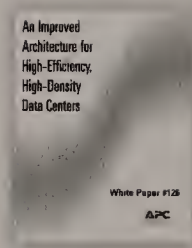
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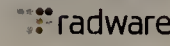
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# Seven tips for succeeding with virtualization

Experts share best practices for optimizing strategic virtualization initiatives

BY DENISE DUBIE

# AS

virtualization projects gain scale and strategic value, enterprise IT managers must move quickly beyond tactical approaches to achieve best results.

Consider these Gartner forecasts: More than 4 million virtual machines will be installed on x86 servers by 2009, and the number of virtualized desktops could grow from less than 5 million in 2007 to 660 million by 2011. The popularity of virtualizing x86 server and desktop resources has many enterprise IT managers reassessing ways to update already virtualized network and storage resources, too.

Virtualization's impact will spread beyond technology changes to operational upheaval. Not only must enterprise IT executives move from a tactical to a strategic mindset but they also must shift their thinking and adjust their processes from purely physical to virtual.

"Enterprise IT managers are going to have to start thinking virtual first and learn how to make the case for virtualization across IT disciplines," says James Staten, principal analyst at Forrester Research. "This will demand they change processes. Technologies can help, but if managers don't update their best practices to handle virtual environments, nothing will get easier."

Here enterprise IT managers and industry watchers share best practices they say will help companies seamlessly grow from 30 to 3,000 virtual machines without worry.

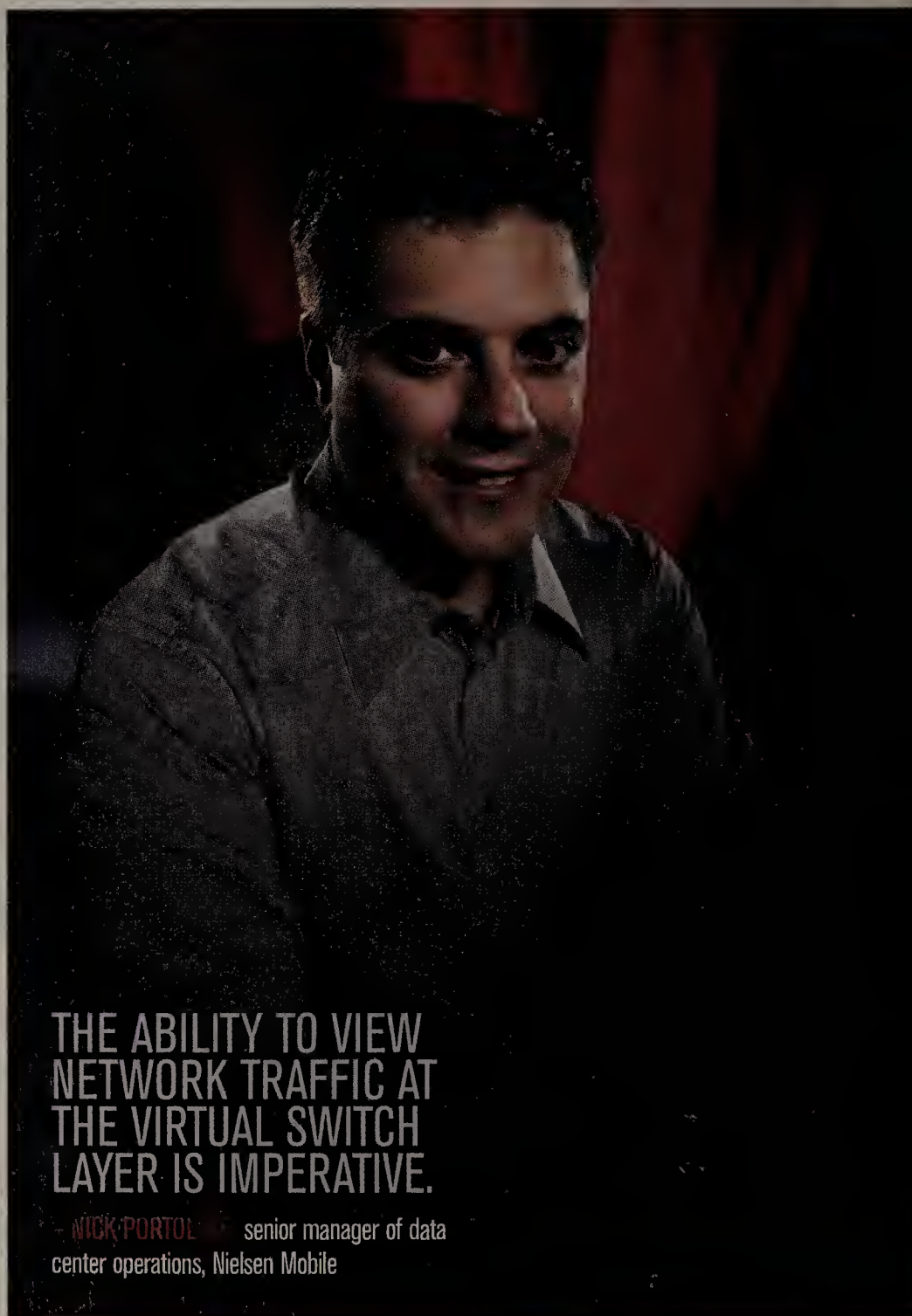
## 1. Approach virtualization holistically

Companies considering standardizing best practices for x86-based server virtualization should think about how they plan to incorporate desktop, application, storage and network virtualization in the future.

IT has long suffered from a silo mentality, with technology expertise living in closed clusters. The rapid adoption of virtualization could exacerbate already strained communications among such IT domains as server, network, storage, security and applications.

"This wave of virtualization has started with one-off gains, but to approach the technology strategically, IT managers need to look to the technology as achieving more than one goal across more than one IT group," says Andi Mann, research director at Enterprise Management Associates.

To do that, an organization's virtualization advocates should champion the technology by initiating discussions among various IT groups and approaching vendors with a broad set of requirements that address short- and long-term goals. Vendors with tech-



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NETWORK TRAFFIC AT  
THE VIRTUAL SWITCH  
LAYER IS IMPERATIVE.

NICK PORTOL senior manager of data  
center operations, Nielsen Mobile

nologies in multiple areas, such as servers and desktops, or with partnerships across IT domains could help IT managers better design their virtualization-adoption road maps. More important, however, is preventing virtualization implementations from creating more problems via poor communications or antiquated organizational charts, industry watchers say.

"With ITIL and other best-practice frameworks, IT has become better at reaching out to other groups, but the speed at which things change in a virtual environment could hinder that progress," says Jasmine Noel, a principal analyst at Ptak, Noel and Associates. "IT's job is to evolve with the technology and adjust its best practices, such as change management, to new technologies like virtualization."

See Virtualization, page 44



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## 2. Identify and inventory virtual resources

Understanding the resources available at any given time in a virtual environment requires enterprise IT managers to enforce strict processes from a virtual machine's birth through death (see "The life and death of a virtual machine," [www.nwdocfinder.com/7125](http://www.nwdocfinder.com/7125)).

Companies need a way to identify virtual machines and other resources throughout their life cycles, says Pete Lindstrom, research director at Spire Security. The type of virtual-machine tagging he suggests would let IT managers "persistently identify virtual-machine instances over an extended period of time," and help to maintain an up-to-date record of the changes and patches made to the original instance. The process would provide performance and security benefits because IT managers could weed out problematic virtual machines and keep an accurate inventory of approved instances.

"The ability to track virtual machines throughout their life cycles depends on a more persistent identity scheme than is needed in the physical world. IT needs to know which virtual resources it created and which ones seemed to appear over time," Lindstrom explains. "The virtual world is so

much more dynamic that IT will need granular identities for virtual machines and [network-access control] policies that trigger when an unknown virtual machine is in the environment. Rogue virtual machines can happen on the client or the hypervisor."

Discovery technology also serves an important role in maintaining an accurate inventory of virtual resources, says Glenn O'Donnell, a Forrester senior analyst. "From a high level, the ITIL processes around managing configuration, change, incidents or problems doesn't change; but virtualization adds another layer of abstraction and numerous configuration items that need to be incorporated into existing processes," he says.

For instance, using such tools as BMC Software's Topology Discovery, EMC's Application Discovery Manager or mValent's Integrity, an IT manager could perform an ongoing discovery of the environment and track how virtual machines have changed. Manual efforts couldn't keep pace with the configuration changes that would occur because of, say, VMware VMotion or Microsoft Live Migration technologies. "IT has to stay on top of a lot more data in a much more dynamic environment," O'Donnell says.

## 3. Plan for capacity

Just because virtual machines are faster to deploy than physical ones, the task shouldn't be taken lightly. "If you are not careful, you can have a lot of virtual machines that aren't being used," says Ed Ward, senior technical analyst at Hasbro in Pawtucket, R.I. He speaks from the experience of supporting 22 VMware ESX host servers, 330 virtual machines, 100 workstations and 250 physical machines.

To prevent virtual-machine sprawl and to curb spending for licenses and power for unused machines, Ward says he uses VKernel's Capacity Analyzer virtual appliance. It alerts him to all the virtual machines in his environment, even those he thought he had removed.

"There are cases in which you build a virtual machine for test and then for some reason it is not removed but rather it's still out there consuming resources, even though it is serving no purpose," Ward says. "Knowing what we already have and planning our investments based on that helps. We can reassign assets that have outlived their initial purpose."

When they create virtual machines, IT managers also must plan for their deletion. "Assign expiration dates to virtual machines when they are allocated to a business unit or for use with a specific application; and when that date comes, validate the need is no longer there and expire the resource," Forrester's Staten says. "Park a virtual machine for three months and if it is no longer needed, archive and delete. Archiving keeps options open without draining storage resources or having the virtual machine sitting out there consuming compute resources."

## 4. Marry the physical and virtual

IT managers must choose the applications supported by virtual environments wisely,

say experts, who warn that few if any IT services will rely only on the virtual infrastructure.

"While some environments could support virtual-only clusters for testing, the more common scenario would have, for instance, two virtual elements and one physical one supporting a single IT service," says Cameron Haight, a Gartner research vice president. "IT still needs to correlate performance metrics and understand the profile of the service that spans the virtual and physical infrastructures. Sometimes people are lulled into a false sense of security thinking the tools will tell them what they need to know or just do [the correlation] for them."

IT managers should push their vendors for reporting tools that not only show what's happening in the virtual realm but also display the physical implications — and potentially the cause — of an event. Detailed views of both environments must be married to correlate why events take place in both realms.

For instance, if utilization on a host server drops from 20% to 10%, it would be helpful to know the change came about because VMware Distributed Resource Scheduler (DRS) moved virtual machines to a new physical server, Haight says. In addition, knowing when and where virtual machines migrate can help prevent a condition dubbed "VMotion sickness" from cropping up in virtual environments. This occurs when virtual move repeatedly across servers — and bring problems they might have from one server to the next, Haight says. Proper reporting tools, for example, could help an administrator understand that a performance problem is traveling with a virtual machine unbeknown to DRS.

## 5. Eliminate virtual blind spots

The fluid environment created by virtualization often includes blind spots. "We monitor all physical traffic, and there is no reason why we wouldn't want to do the same for the virtual traffic. It's a huge risk not knowing what is going on, especially when the number of virtual servers is double what you have for physical boxes," says Nick Portolese, senior manager of data center operations at Nielsen Mobile in San Francisco.

Portolese supports an environment with about 30 VMware ESX servers and 500 to 550 virtual machines. Early on, he realized he wasn't comfortable with the amount of network traffic he could monitor in his virtual environment. Monitoring physical network traffic is a must, but he found the visibility into traffic within the virtual environment was non-existent.

Start-up Altor Networks provided Portolese with what he considered necessary tools to track traffic in the entire environment. Altor's Virtual Network Security Analyzer (VNSA) views traffic at the virtual — not just the network — switch layer. That means inter-virtual-machine communications or even virtual desktop chatter won't be lost in

See Virtualization, page 46

**"CERTIFICATIONS ARE RARE, THOUGH I DO HAVE TWO [VMWARE CERTIFIED PROFESSIONALS] ON MY STAFF."**

— ROBERT JACKSON, director of infrastructure, Reliance Limited Partnership





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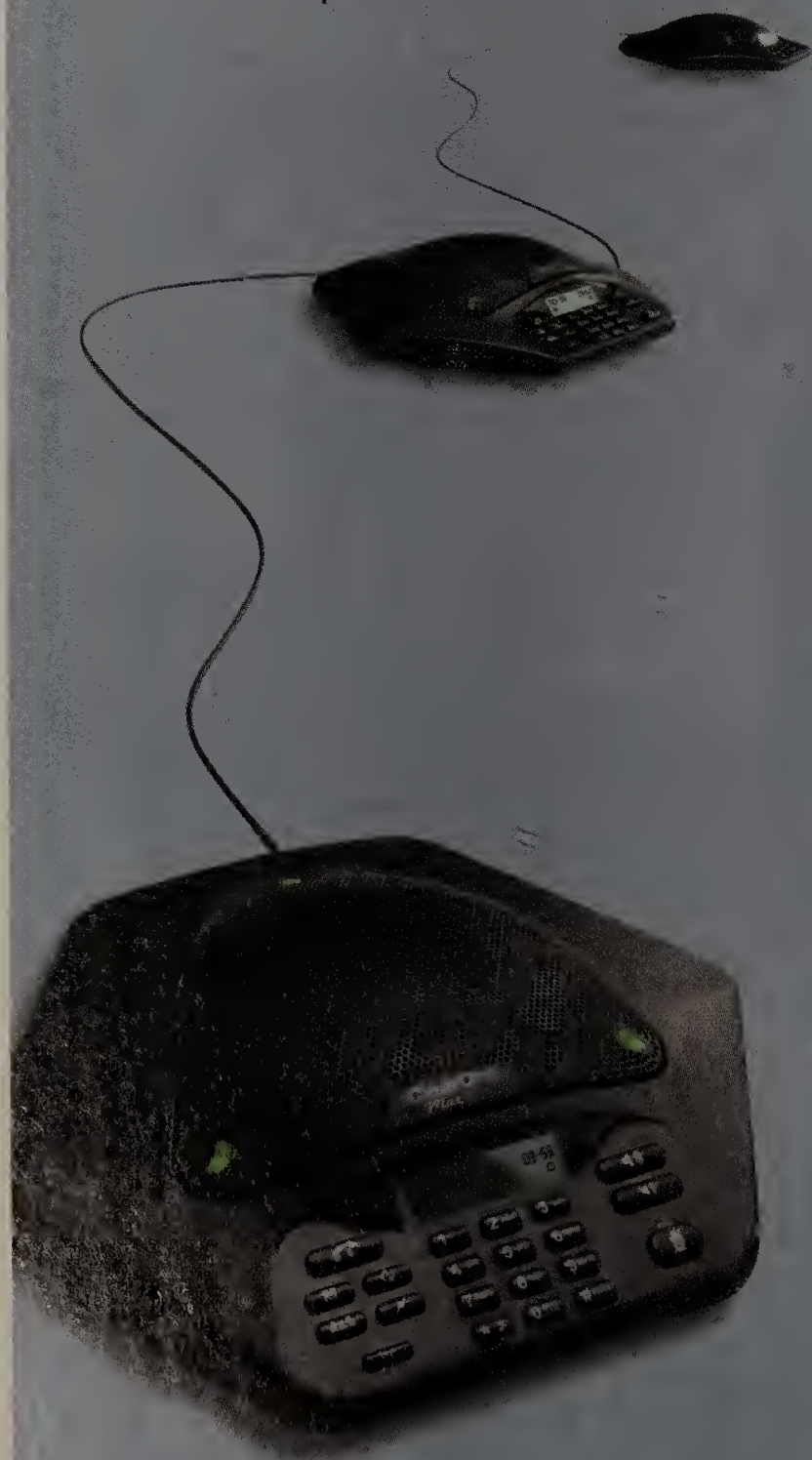
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transmission, the company says. VNSA provides a comprehensive look at the virtual network and analyzes traffic to give network security managers a picture of the top application talkers, most-used protocols and aspects of virtualization relevant to security. It's a must-have for any virtual environment, Portolese says.

"We didn't have anything to monitor the virtual switch layer, and for me to try to monitor at the virtual port was very difficult. It was impossible to tell which virtual machine is coming from where," Portolese explains. "You will get caught with major egg on your face if you are silly enough to think you don't have to monitor all traffic on the network."

### 6. Charge back for virtual resources

Companies with chargeback policies should apply the practice to the virtual realm, and those without a set process should institute one before virtualization takes off.

Converting physical resources to virtual ones might seem like a no-brainer to IT folks, who can appreciate the cost savings and administration changes, but business units often worry that having their application on a virtual server might affect performance negatively. Even if a company's structure doesn't support the IT chargeback model, business units might be more willing to get on board with virtualization if they are aware of the related cost savings, Forrester's Staten says.

"IT can provide some transparency to the other departments by showing them what they can gain by accepting a virtual server. This includes lower costs, faster delivery against [service-level agreements], better availability, more-secure disaster recovery and the most important one — [shorter time to delivery]. It will take six weeks to get the physical server, but a virtual server will be over in more like six hours," Staten says.

In addition, chargeback policies would be an asset to IT groups looking to regain some of their investment in virtualization. At Hasbro, IT absorbs the cost of the technology while the rest of the company takes advantage of its benefits, Ward says. "The cost of physical machines comes out of the business department's budget, but the cost of virtual machines comes out of the IT budget," he says.

### 7. Capitalize on in-house talent

IT organizations also must update staff to take on virtualization. Certification programs, such as the VMware Certified Professional (VCP) and Microsoft's Windows Server Virtualization, are available, but in-house IT staff must weigh which skills they need and how to train in them. "Certifications are rare, though I do have two VCPs on my staff. Most IT professionals who are able to take the exam and get certified would probably work in consulting," says Robert Jackson, director of infrastructure at Reliance Limited Partnership in Toronto.

With training costing as much as \$5,000 per course, IT workers might not get budget approval. Gartner's Haight recommends assembling a group of individuals from the entire IT organization into a center of excellence of sorts. That would enable the sharing of knowledge about virtualization throughout the organization.

"We surveyed IT managers about virtualization skills, and about one-quarter of respondents had a negative perspective about being able to retain those skills in-house," Haight says. "Disseminating the knowledge across a team would make an organization more secure and improve the virtualization implementation overall with fewer duplicated efforts and more streamlined approaches."

In the absence of virtualization expertise, Linux proficiency can help, Hasbro's Ward says. VMware support staff seem to operate most comfortably with that open source operating system, he says.

In general, moving from pilot to production means increasing the staff for the daily care and feeding of a virtual environment, Ward says. "Tools can help, but they can't replace people." ■

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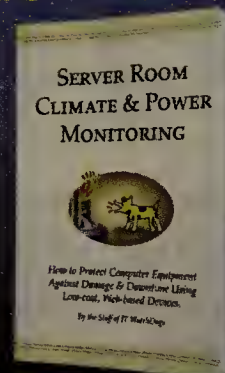
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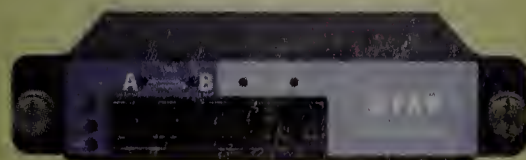
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## Ethernet

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new Nexus 7000 and 5000 data-center switches, DeSanti says. These features can be made standard-compliant with a firmware upgrade once the standards are complete, he says.

"Consensus has been achieved on what the mechanisms are and how they should behave," DeSanti says. "So, it is already possible to have products that will become standard-compliant, even if the standard is still in the phase of construction."

The Qau standard, however, is "ambitious" and may not be necessary for initial implementations of DCE, DeSanti says. Nonstandard implementations of congestion notification may suffice.

Force10, however, has no intentions of shipping pre-standard CEE technology even though the University of New Hampshire already conducted an FCoE interoperability "plugfest." The company plans to comply fully with the T11 and DCB standards once they are solid, Garrison says.

Mass market demand won't bubble up until then, Garrison says. "There still could be some hic-

**"The biggest [snag] is, what do we call it? Is this acronym proprietary? Is it a unified push among many vendors?"**

**Steve Garrison**

Vice president of marketing, Force10 Networks

cups and bugs that get discovered that have to be addressed so that's why we're waiting," he says.

Apart from the standards efforts, CEE and DCE may raise some operational challenges, says Chuck Hollis, EMC's global marketing CTO. Convergence might disrupt the usual data-center setup in which three groups are responsible for operating three distinct networks, he says.

It isn't clear who manages a converged fabric, Hollis says in a blog post on the EMC site. "In terms of organizational responsibility, we've got an entirely new construct, don't we?" he asks. "I mean, today we've got separate disciplines and largely linear workflows between the groups. What happens when we can put it all on one console? And even if we can do it, will people want it?"

Nonetheless, CEE and DCE vendors are encouraged that they've agreed on the technologies to be included in the standards, and that major hurdles to finalizing them — acronyms notwithstanding — have been stamped out.

"I don't see any show-stoppers here — it's just time," Force10's Garrison says. "This is just another evolutionary step. [Ethernet] worked great for mundane or typical applications — now we're getting to time-sensitive [applications], and we need to have a little bit more congestion control in there."

— Senior Writer Jon Brodtkin contributed to this story.

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(Required by 39 U.S.C. 3685)

1. Title of Publication: Network World
2. Publication No: 735-730
3. Date of filing: September 26, 2008
4. Issue Frequency: Weekly, with combined issues, last week of June, first week of July and last 2 weeks of December
5. Number of issues published annually: 50
6. Annual subscription price: \$129.00
7. Complete mailing address of known office of publication: 492 Old Connecticut Path, PO Box 9002, Framingham, MA 01701-9002 (Middlesex-Central County).
8. Complete mailing address of headquarters or general business office of publisher: Network World, 492 Old Connecticut Path, PO Box 9002, Framingham, MA 01701-9002 (Middlesex-Central County).
9. Full names and Complete mailing addresses of publisher, editor and managing editor:  
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Editor-in-Chief, John Dix, 492 Old Connecticut Path, PO Box 9002, Framingham, MA 01701-9002.  
Managing Editor, Ryan Francis, 492 Old Connecticut Path, PO Box 9002, Framingham, MA 01701-9002
10. Owner: International Data Group, 1 Exeter Plaza, Boston, MA 02116-2851.
11. Known bondholders, mortgages and other security holding 1% or more of total amount of bonds, mortgages or other securities: International Data Group, One Exeter Plaza, 15th Fl, Boston, MA 02116-2851. None
12. For completion by nonprofit organizations authorized to mail at special rates: Not applicable.
13. Publication Name: Network World
14. Issue date for circulation data below: September 29, 2008.
15. Extent and Nature of circulation:

	Average No. Copies Each Issue During Preceding 12 Months	Actual No. Copies of Single Issue Published Nearest to Filing Date
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B. Paid and/or requested circulation		
(1) Paid/Request Outside-County Mail Subscriptions Stated on form 3541. (Include advertiser's proof and exchange copies)	153,703	152,695
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E. Total Nonrequested Distribution (Sum of 15d (1),(2), and (3))	0	0
F. Total Distribution (Sum of 15c, and e)	155,001	153,792
G. Copies not distributed	1,213	2,702
H. Total (Sum of 15f and 15g)	156,214	156,494
I. Percent paid and/or Requested Circulation (15c divided by 15g Times 100)	100%	100%

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## BACKSPIN

Mark Gibbs

# Four tactics for surviving the doom, gloom

**E**nough already! I've had it with all of the economic doom and gloom. Sure, the market sucks. Sure our 401ks are in the toilet. Sure, the government is spending our money and our children's money (and probably our children's children's money), but really, how much of a wuss are you going to be?

Here's what many IT shops are doing wrong: They see the economic downturn as

a time to hunker down, a time to dig in, reduce spending, put new programs and initiatives on hold and batten down the hatches hoping they can last out the storm.

Wrong. Now's the time to let the competition be the wuss.

Let the competition chicken out. Let them try to reduce operation costs and compromise their business. With luck they'll just bleed away their forward momentum and wallow in their self-invented slough of despond while you get to eat their lunch. And their dinner.

If you're smart, take this as an opportunity to not only keep but gain forward momentum, and to do so you're going to have to keep spending. Not irrationally, but in line with what you are supposed to be doing.

Here's what we all need to realize: IT isn't a luxury; it isn't something that's nice to have, it is the only engine that can power the corporate bus. So, here are my four tactics to help IT survive the downturn:

**1. Fight for your budget.** You know what's going to happen: The CEO and or the CFO are going to try to put on the thumbscrews as if IT costs were the whole problem.

They'll be whining, "You've got to reduce spending," but don't let them get to you, especially if the cuts they want aren't across the board! Even then, you know there's a level of budget reduction at which IT can't do what it is supposed to do, and without IT you

know your business is toast. A nonplayer.

You need to ensure your budget is in line with corporate income but don't allow short-term deficits to drive expenditure. Just because the CEO has planned a sales meeting in the Bahamas doesn't mean that in financially strapped times IT should wind up, in effect, paying for the sales team to drink pina coladas.

**2. Search for efficiencies.** The prospect of unemployment focuses the mind wonderfully, and your team needs to realize that making IT more efficient and effective is the best route to job security.

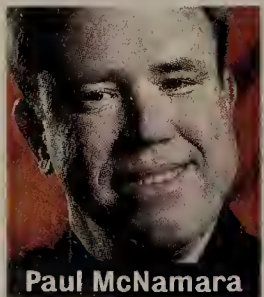
**3. Expose the inefficiencies in lines of operations.** You own the data. You have access to every piece of information about operations that is worth having. Use it.

If, for example, manufacturing is missing an opportunity by not optimizing their supply chains or they are holding too much raw material, rat 'em out. Make sure the opportunity for improvement is visible and define a solution. Sure, it's all getting very political, but it's your livelihood on the line.

**4. Don't slow down.** If you have projects underway, get 'em done. Don't give the business lines an excuse to claim they don't have the tools. In fact, work to make them admit, publicly, that not only do they have the tools, but that they work and work right. In tough times the blame game is the game that everyone loves to play, so make damn sure you're not in anyone's firing line.

Make no mistake, we are in bad times. Things are likely to get worse before they get better, but it is times like these that test men's souls and fortitude. So, are you going to be a man or a mouse? Or a wuss?

*Gibbs talks tough in Ventura, Calif. Talk back to [backspin@gibbs.com](mailto:backspin@gibbs.com). To see a version of this column with links, go to [www.nwdcfinder.com/7164](http://www.nwdcfinder.com/7164).*



Paul McNamara

## NETBUZZ

News, Insights, oddities

# An unsettling week for everyone but Joe

**T**he temptation is to compare last week's economic news to a roller-coaster, if not for the fact that doing so would be a cliché ... and I so easily become ill on amusement park rides. OK, I guess it is the only apt comparison, after all.

Remember Monday's rise of 900 points on the Dow? Sure you do ... Me neither.

That was the day Bill Gates told a symposium at the Harvard Business School that he expects the unemployment rate of 6.1% to top 9% before the dust settles.

"Consumer sentiment has never been so low," Gates said. "So no matter how quickly this gets fixed, you're still going to have an economic cycle with a fairly significant recession."

He didn't express any concern about being able to put his children through college.

The market tanked on Tuesday, of course ... and again on Wednesday.

But I read a story on Network World's own Web site about Gartner assuring one and all that no matter how bad things get they won't be as bad as ... the dot-com bubble burst.

"In the worst-case scenario, our research indicates an IT spending increase of 2.3% in 2009, down from our earlier projection of 5.8%," said Gartner analyst Peter Sondergaard. "Developed economies, especially the United States and Western Europe, will be the worst affected, but emerging regions will not be immune. Europe will experience negative growth in 2009; the United States and Japan will be flat."

Pass the party hats.

But perhaps the week's most unsettling development occurred out of earshot to anyone but me: My 83-year-old father in a phone call asked, "Are you guys getting through this thing OK?" What he was really asking was whether the five of us might show up on his doorstep clutching

our few remaining earthly possessions. I assured him we are fine, but he nonetheless felt compelled to regale me with another round of stories about how his family coped with the Great Depression.

Thanks for another trip to the amusement park, Dad.

## Different 'Joe the Plumber' strikes 'Net gold

He might not be the most famous plumber in America, but he does own the most suddenly desirable address on the Internet.

That would be Joe the Plumber. No, not *that* Joe the Plumber — John McCain's Joe Six-Pack, but rather Joe the Plumber from Amarillo, Texas. That Joe owns the Web site [joetheplumber.com](http://joetheplumber.com).

Driving to work Thursday morning the thought occurred that someone must have owned it ... although I was ready to whip out the credit card if not. In fact, Amarillo Joe has had the site registered with Network Solutions since 2004, and, yes, there are indications as I type that it may be for sale.

Search Engine Land was quick with an analysis of what this reflected fame means for Amarillo Joe, in particular, and plumbers named Joe in general. Bottom line: They had better have sturdy Web servers.

Wrote Danny Sullivan: "I can only imagine what type of traffic they're getting — and how puzzled they were if they noticed a spike in visits or phone calls. In fact, when I twittered about this, Shawn Collins twittered back that one of them ([joetheplumber.com](http://joetheplumber.com)) had indeed gotten offers for his site already."

One more thing about [joetheplumber.com](http://joetheplumber.com). In perusing the site, I noticed this telling indication of exactly how far the Internet has seeped into everyday American life: Amarillo's Joe the Plumber has a mailing list. It features, "Breaking news about our business, helpful tips and exclusive special offers." A plumber, a mailing list.

*Comments and motion-sickness remedies to [buzz@nww.com](mailto:buzz@nww.com).*

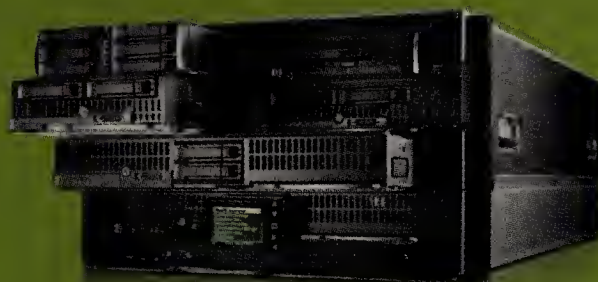


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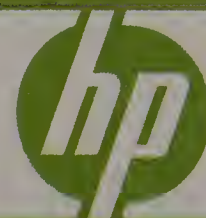


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